C.

# THE METHOD OF ULLAGING and INCHING All SORTS of CASKS and other UTENSILS,

USED BY

Common Brewers, Victuallers, Diſtillers, &c.

In a new, eaſy, and accurate Manner, by

TABLES of SEGMENTS.

LIKEWISE,

The METHOD of finding their full Contents.

Very uſeful for the

OFFICERS of the REVENUE,

And all other Perſons concerned in GAUGING.

### By WILLIAM YEO.

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MDCCXLIX.

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To the HONOURABLE

# His Majeſty's Commiſſioners

FOR THE

## DUTIES of EXCISE, &c.

*May it pleaſe your* HONOURS,

THE following Treatiſe is compiled with a View to improve the Practice of GAUGING, particularly that Part of it, which relates to the Ullaging of Casks; and for this Purpoſe, I have calculated very accurate and extenſive Tables of Segments, which, if introduced into Practice, would render that Buſineſs exact and eaſy;

and the Whole being new, and deſigned chiefly for the Uſe and Benefit of the Officers of Exciſe, it naturally applies itſelf to you; that it may prove ſerviceable to them, and meet with your Approbation, is the earneſt Deſire of

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*Your moſt humble*

*and moſt obedient Servant,*

William Yeo.

# A
# TREATISE
# OF
# Ullaging.

HAVING obſerved, that moſt Authors, who have wrote on the Art of GAUGING, have very ſlightly paſſed over that Part of it, which relates to the *Ullaging of Casks*; and alſo, that the ſame may be very commodiouſly applied to all other Utenſils, I have thought it worth my while to compoſe the following Tract, wherein I have endeavoured to bring this Matter to as great an Exactneſs, and to make it as eaſy in Practice, as the Nature of the Thing will admit of.

IT is eaſy to perceive, that there is a two-fold Difference in the Segments of the Fruſtums of all Solids, the one ariſing from the different Proportions or Ratios betwixt the Diameters of their greater and leſſer Baſes; and the other from the different Curvature of their Sides. The latter being much the ſmalleſt, is determined by the different Proportions betwixt their circumſcribing Cylinders and whole Contents. And as the full Contents of all open Utenſils are obtained very near the Truth by taking a few Dimenſions within them; it follows, that we can always know to what Form they neareſt approach, or what the Degree of Curvature in their Sides is.

Herein I have only principally conſidered Spheroids, becauſe, it being a very difficult Thing to determine on the Sight of any Caſk, what Form it is of, their Contents are generally computed as ſuch; but for them I have given very large and accurate Tables of Segments for eight Varieties, ſerving alſo very well for the twenty-nine diſtinguiſhed by the ſeveral Ratios expreſſed at the Tops of the Columns. Moreover, to compoſe ſuch large Tables for all the Varieties of Solids, differing in Curvature, that might occur in Practice, would be a moſttedious and almoſt endleſs Work. However, this Deficiency is in a great meaſure ſupplied by other Tables, which I have alſo ſubjoined, exhibiting the Differences of theſe Segments in their ſeveral Varieties, from the Segments of other Solids having different Degrees of Curvature, in their ſeveral Varieties. The firſt of theſe is of the ſame Order or Variety, reſpecting their Diameters, with the firſt Order or Variety of Spheroids; the ſecond Table is of the ſame Order, reſpectig the Diameters, with the ſecond Order of Spheroids and ſo on. So that if we can by any means come at the full Content of any Caſk, or other Utenſil near the Truth, we can always be aſſured of obtaining its true Segments very nearly.

How theſe Tables are to be managed, as alſo their Conſtructions, will appear from the Problems which precede them, and the Examples I have produced to illuſtrate their Uſe.

And this Way of Proceeding, being agreeable to the Principles of ſolid Geometry, ſeems to me of all the moſt natural and beſt ſuited to ſuch Purpoſes. Nor can it give much more Trouble in the Management, than the uſual Methods practiced in theſe Caſes, and the Con-

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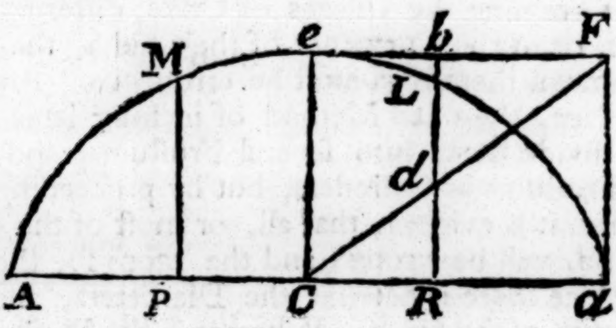
cluſions will certainly be exact, whereas in the common Way, it can ſeldom or never happen ſo. For in the firſt Place, the Ullages of all ſtanding Caſks, being determined in the common Way, by one Line of Segments, which is graduated on the Sliding Rule for Spheroids, whoſe Bung Diameters are to their Head Diameters nearly in the Ratio of 100 to 82; and the Ullages of all lying Caſks by another Line of Segments graduated on the Sliding Rule alſo for Spheroids, whoſe Bung Diameters are to their Head Diameters nearly in the Ratio of 100 to 75, but this laſt very faulty even for ſuch ſort of Caſks: It follows, that as often as theſe Lines are uſed for determining the Ullages of Caſks, differing in thoſe Ratios, or in the Curvature of their Sides, the Concluſions drawn therefrom muſt be erroneous. And, in the next Place, the uſual Method of inching large Utenſils, is, to divide them into ſeveral Fruſtums, and to inch thoſe Fruſtums as Cylinders, but by proceeding in this Manner, it is evident, that all, or moſt of the Contents ſo found, will be wrong; and the more ſo, the greater Difference there is betwixt the Diameters, and in the Curvature of the Sides. Whereas if the Methods herein laid down are duly followed, we can always make our Calculations in a manner as exact as we pleaſe. So that by this Means the Buſineſs of inching any kind of Veſſels, and making ſtanding Tables of their Contents at any aſſigned Depths, to which we may at any time have Recourſe, is rendered in ſome Degree univerſal and compleat.

## PROBLEM.

*To cube the Part of the Spheroid generated by the Rotation of the Part* MP*e*C *of the Ellipſis* A*e a.*

**Make** PC $= x$, PM $= y$, AC $= a$, and C*e* $= c$. Then the Equation $y^2 = c^2 - \frac{c^2x^2}{a^2}$ will expreſs the Nature of the Ellipſis.



**Let** the Ratio of the Radius of a Circle to the Circumference be expreſſed by $\frac{p}{r}$, and the Area of the Circle deſcribed by the Radius P M will be $= \frac{py^2}{2r}$, but ſubſtituting for $y^2$ its Value $\left(c^2 - \frac{c^2x^2}{a^2}\right)$ the ſaid Area will be $= \frac{pc^2}{2r} - \frac{pc^2x^2}{2ra^2}$, which multiply'd into $\dot{x}$ gives $\frac{pc^2\dot{x}}{2r} - \frac{pc^2x^2\dot{x}}{2ra^2}$ for the Fluxion of the Part to be cubed.

Otherwiſe.

## Otherwiſe.

DRAW $a$F parallel and equal to C$e$, and let RL meet the Line joining the Points $e$, F in $b$, and the Diameter CF in $d$. Then by the Property of the Ellipſis $\overline{Rd}^2 = \frac{c^2x^2}{a^2}$. Now the Fluxion of the Cylinder generated by the Rotation of the Parallelogram C$ebr$ is $\frac{pc^2\dot{x}}{2r}$, and the Fluxion of the Cone generated by the Triangle CR$d$ is $\frac{pc^2x^2\dot{x}}{2ra^2}$; from the former Fluxion take the latter Fluxion and we have $\frac{pc^2\dot{x}}{2r} - \frac{pc^2x^2\dot{x}}{2ra^2}$, which is the ſame as was found above.

WHENCE it is evident, that the Spheroidical Space MP$e$C is equal to the Difference of the ſaid Cylinder and Cone; that is, by taking the Fluents, we ſhall have $\frac{pc^2x}{2r} - \frac{pc^2x^3}{6ra^2}$ for the Solidity of the ſaid Space. But if for $\frac{x^2}{a^2}$ in this Value, we write its Equal $1 - \frac{y^2}{c^2}$, we ſhall have $\frac{pc^2x}{6r} - \frac{py^2x}{6r}$ for the Value of the Cone; which conſequently, will vary as the Value of $\frac{y^2}{c^2}$ varies. And if the Space MP$e$C, or C$e$RL, which is equal to it, be cut into any Number of Parts by parallel and equidiſtant Planes, it is plain, that the Cylinder and Cone will be cut into the ſame Number of Parts, and that the Difference of their Segments will be equal to the ſeveral and reſpective Segments of the Space MP$e$C.

HENCE

HENCE we have a very eaſy Method for conſtructing a Table of Segments for upright Spheroidical Caſks, whoſe Bung Diameters have a given Ratio to their Head Diameters. For the Segments of the circumſcribing Cylinder are had by multiplying its Content into the ~~Quotient of the Depth~~ of the Segment divided by the Height of the Cylinder, and the upper Segments of the Cone C R *d* are had by multiplying its Content into the Cube of yᵉ [illegible] ~~Quotient of the Cube~~ of the Depth of the Segment divided by the Height of the Cone; and theſe being taken from the Cone's whole Content, will leave the lower Segments of the Cone. Which being duly conſidered, if the Length of any Caſk be divided into 1000 equal Parts, and the Content into 10,000; it will not be difficult for any one to find the Number of Parts, of the latter correſponding to any Number of Parts of the former.

FOR Inſtance, if it were required ro find the Segment anſwering to $\frac{1}{4}$ or 250 thouſandth Parts of the Length in ſuch a Table, ſuppoſing the Bung Diameter to be to the Head Diameter, as 100 is to 67; it will be found thus. The Ratio of the circumſcribing Cylinder to the Caſk's Content, in this Caſe, is, 8163; and the Ratio of the ſame to the Cone is, 1837. Therefore the Ratio of the Caſk's Content to its circumſcribing Cylinder will be 1,225, and the Ratio of the ſame to their Difference .225. If 1.225 be multiply'd into $\frac{1}{4}$ or .25 we ſhall have .3062 for the Cylindrical Segment expreſſed in ten thouſandth Parts of the Caſk's Content, and if the Cube of $(1 - 2 \times \frac{1}{4}$ or$)$ .5 be ſubſtracted from Unity, and the Remainder multiplied into the half of .225 we ſhall have .0984 for the Conical Segment expreſſed in the ſame Parts. Wherefore if the latter be taken from the former, we ſhall have .2078 which is the Segment required. And by proceeding in the ſame manner, all the other Segments may be found; but it will be ſufficient, if the Segments are computed by this Rule, only to every hundredth Part of the Length; and then the reſt may be interpolated by the Help of their Differences.

THE Segments of a Caſk in the Form of a parabolical Conoid may be obtained in the following Manner.

SUBSTRACT the Ratio of the Caſk's Content to its inſcribed Cylinder from Unity, and divide the Remainder by 5000. To the Quotient add a hundredth Part of the ſaid Ratio, and the Sum will be the firſt Segment, the Length being divided into 100 equal Parts. To four Times the Quotient add two hundredth Parts of the ſaid Ratio, and the Sum will be the ſecond Segment. To nine Times the Quotient add three hundreth Parts of the ſaid Ratio and the Sum will be the third Segment, and ſo on.

EXAMPLE. Let the Bung Diameter be to the Head Diameter, as 100 is to 67. Then the Ratio of the Caſk's Content to its inſcribed Cylinder will be .6171, and $\frac{1.0000 - 0,6171}{5000} = 0,0000766$, and $0,0000766 + 0,006171 = 0,0062$, *&c.* = Segment anſwering to 100th Part of the Length.

$0,0000766 \times 4 + 0,006171 \times 2 = 0,0126$, *&c.* = Segment anſwering to 200th Parts of the Length.

$.0000766 \times 9 + .006171 \times 3 = .0192$ = Segment anſwering to 300th Parts of the Length.

$.0000766 \times 16 + .006171 \times 4 = .0259$ = Segment anſwering to 400th Parts of the Length, *&c.*

THE Segments of a Caſk in the Form of the Fruſtums of two Cones may be found by this Rule.

To the Ratio of the Bung Diameter to the Head Diameter add $\frac{1}{50}$, $\frac{2}{50}$, $\frac{3}{50}$, *&c.* Parts of the Difference between 1.00 and the ſaid Ratio. Let $\frac{1}{3}$ Part of each Sum, $\frac{1}{3}$ Part of the Square of each Sum, and alſo $\frac{1}{3}$ be added together. Then multiply the Sums thus reſulting, the firſt into 49, the ſecond into 48, the third into 47, *&c.* hundredth Parts of the Ratio of the Caſk's Content to its circumſcribing Cylinder, and the Products being ſeverally deducted from .5 will leave the Segments correſponding to 100th 200th 300th, *&c.* Parts of the Length.

SUPPOSE the Ratio of the Bung Diameter to the Head Diameter be .67. Then $\frac{1.00 - .67}{50} = .0066$, and .67

$+ .0066 = .6766$, and $\frac{.6766}{3} = .2255$

$$\frac{.6766|^2}{3} = .1526$$

$$\frac{1}{3} = \underline{.3333}$$

$$.7114$$

THE Ratio of the Caſk's Content to its circumſcribing Cylinder is 1.4159, which multiply'd into $\frac{49}{100}$ gives .69379, and $.7114 \times .69379 = .49356$, which taken from .5 leaves $.0064 =$ the Segment anſwering to 100th Part of the Length.

AGAIN $.67 + .0066 \times 2 = .6832$, and

$$\frac{.6832}{3} = .22773$$

$$\frac{.6832|^2}{3} = .15559$$

$$\frac{1}{3} = \underline{.33333}$$

$$.71665$$

and $.5 - .71665 \times 1.4159 \times \frac{48}{100} = .0129 =$ the Segment anſwering to 200th Parts of the Length.

LASTLY $.67 + .0066 \times 3 = .6898$, and

$$\frac{.6898}{3} = .22993$$

$$\frac{.6898|^2}{3} = .15861$$

$$\frac{1}{3} = \underline{.33333}$$

$$.72187$$

and $.5 - .72187 \times 1.4159 \times \frac{47}{100} = .0196 =$ Segment anſwering to 300th Parts of the Length, *&c.*

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A TABLE

# A
# TABLE
# OF
# *SEGMENTS*,
Calculated for
EIGHT VARIETIES
OF
Upright Spheroidical Casks,
TO
Every thouſandth Part of the Length.

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## Spheroids ſtanding.

| Height of the Segment. | 1 Var. ,67 ,68 ,69 | 2 Var. ,70 ,71 ,72 ,73 | 3 Var. ,74 ,75 ,76 | 4 Var. ,77 ,78 ,79 ,80 | 5 Var. ,81 ,82 ,83 ,84 | 6 Var. ,85 ,86 ,87 ,88 | 7 Var. ,89 ,90 ,91 ,92 | 8 Var. ,93 ,94 ,95 |
|---|---|---|---|---|---|---|---|---|
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 1 | .0006 | .0006 | .0007 | .0007 | .0008 | .0008 | .0009 | .0009 |
| 2 | .0011 | .0012 | .0013 | .0014 | .0015 | .0016 | .0017 | .0018 |
| 3 | .0017 | .0019 | .0020 | .0021 | .0023 | .0025 | .0026 | .0028 |
| 4 | .0023 | .0025 | .0027 | .0028 | .0031 | .0033 | .0035 | .0037 |
| 5 | .0029 | .0031 | .0034 | .0036 | .0038 | .0041 | .0044 | .0046 |
| 6 | .0034 | .0037 | .0040 | .0043 | .0046 | .0049 | .0052 | .0055 |
| 7 | .0040 | .0043 | .0047 | .0050 | .0053 | .0057 | 0061 | .0064 |
| 8 | .0046 | .0050 | .0054 | .0057 | .0061 | .0066 | .0070 | .0074 |
| 9 | .0051 | .0056 | .0060 | .0064 | .0069 | .0074 | .0078 | .0083 |
| 10 | .0057 | .0062 | .0067 | .0071 | .0077 | .0082 | .0087 | .0092 |
| 11 | .0063 | .0068 | .0074 | .0078 | .0085 | .0090 | .0096 | .0101 |
| 12 | .0069 | .0075 | .0081 | .0085 | .0092 | .0098 | .0104 | .0111 |
| 13 | .0074 | .0081 | .0087 | .0093 | .0100 | .0107 | .0113 | .0120 |
| 14 | .0080 | .0087 | .0094 | .0100 | .0107 | .0115 | .0122 | .0129 |
| 15 | .0086 | .0094 | .0101 | .0107 | .0115 | .0123 | .0131 | .0139 |
| 16 | .0092 | .0100 | .0108 | .0114 | .0123 | .0131 | .0139 | .0148 |
| 17 | .0098 | .0106 | .0115 | .0121 | .0130 | .0139 | .0148 | .0157 |
| 18 | .0103 | .0112 | .0121 | .0129 | .0138 | .0148 | .0157 | .0166 |
| 19 | .0109 | .0119 | .0128 | .0136 | 0145 | .0156 | .0165 | .0176 |
| 20 | .0115 | .0125 | .0135 | 0143 | .0153 | .0164 | .0174 | .0185 |
| 21 | .0121 | .0132 | .0142 | 0150 | .0161 | 0172 | 0183 | .0194 |
| 22 | .0127 | .0138 | .0149 | .0158 | .0169 | .0181 | .0192 | .0204 |
| 23 | .0133 | .0145 | .0156 | .0165 | .0177 | .0189 | .0201 | .0213 |
| 24 | .0139 | .0151 | .0163 | .0173 | .0185 | .0198 | .0210 | .0222 |
| 25 | .0145 | .0158 | .0171 | .0180 | .0193 | .0206 | .0219 | .0232 |
| 26 | .0152 | 0165 | .0178 | .0187 | .0201 | 0214 | 0227 | .0241 |
| 27 | .0158 | .0171 | .0185 | .0195 | .0209 | .0223 | 0236 | .0250 |
| 28 | .0164 | .0178 | .0192 | .0202 | .0217 | .0231 | 0245 | .0259 |
| 29 | .0170 | .0184 | .0199 | .0210 | .0225 | 0240 | .0254 | .0269 |
| 30 | .0176 | .0191 | .0206 | .0217 | .0233 | .0248 | .0263 | .0278 |

Spheroids ſtanding.

| Height of the Segment. | 1 Var.<br>,67<br>,68<br>,69<br>Seg. | 2 Var.<br>,70<br>,71<br>,72<br>,73<br>Seg. | 3 Var.<br>,74<br>,75<br>,76<br>Seg. | 4 Var.<br>,77<br>,78<br>,79<br>,80<br>Seg. | 5 Var.<br>,81<br>,82<br>,83<br>,84<br>Seg. | 6 Var.<br>,85<br>,86<br>,87<br>,88<br>Seg. | 7 Var.<br>,89<br>,90<br>,91<br>,92<br>Seg. | 8 Var<br>,93<br>,94<br>,95<br>Seg. |
|---|---|---|---|---|---|---|---|---|
| 31 | .0182 | .0198 | .0213 | .0225 | .0241 | .0257 | .0272 | 0287 |
| 32 | .0189 | .0205 | .0221 | .0232 | .0249 | .0265 | .0281 | .0297 |
| 33 | .0195 | .0211 | .0228 | .0240 | .0257 | .0274 | 0290 | .0306 |
| 34 | .0202 | .0218 | .0235 | .0247 | .0265 | .0282 | .0299 | .0315 |
| 35 | .0208 | .0225 | .0243 | .0255 | .0273 | .0291 | .0308 | .0325 |
| 36 | .0214 | .0232 | .0250 | .0263 | .0281 | .0299 | .0316 | .0334 |
| 37 | .0221 | .0239 | .0257 | .0270 | .0289 | .0308 | .0325 | .0343 |
| 38 | .0227 | .0245 | .0264 | .0278 | .0297 | .0316 | .0334 | .0352 |
| 39 | .0234 | .0252 | .0272 | .0285 | .0305 | .0325 | .0343 | .0362 |
| 40 | .0240 | .0259 | .0279 | .0293 | .0313 | .0333 | .0352 | .0371 |
| 41 | .0247 | .0266 | .0287 | .0301 | .0321 | .0342 | .0361 | .0380 |
| 42 | .0253 | .0273 | .0294 | .0309 | .0329 | .0350 | .0370 | .0390 |
| 43 | .0260 | .0280 | .0302 | .0316 | .0338 | .0359 | .0379 | .0399 |
| 44 | .0267 | .0287 | .0309 | .0324 | .0346 | .0367 | .0388 | .0409 |
| 45 | .0274 | .0295 | .0317 | .0332 | .0354 | .0376 | .0397 | 0418 |
| 46 | .0280 | .0302 | .0324 | .0340 | .0362 | .0384 | .0406 | .0427 |
| 47 | .0287 | .0309 | .0332 | .0348 | .0370 | .0393 | .0415 | .0437 |
| 48 | .0294 | .0316 | .0339 | .0355 | .0379 | .0401 | .0424 | .0446 |
| 49 | .0300 | .0323 | .0347 | 0363 | .0387 | .0410 | .0433 | .0456 |
| 50 | .0307 | .0330 | .0354 | 0371 | .0395 | .0418 | .0442 | .0465 |
| 51 | .0314 | .0337 | .0362 | .0379 | .0403 | .0427 | .0451 | .0475 |
| 52 | .0321 | .0345 | .0369 | .0387 | .0412 | .0436 | .0460 | .0484 |
| 53 | .0328 | 0352 | .0377 | .0395 | .0420 | .0444 | .0469 | .0493 |
| 54 | .0335 | .0360 | .0385 | .0403 | .0429 | .0453 | .0478 | .0503 |
| 55 | .0342 | .0367 | .0392 | .0411 | .0437 | .0462 | .0487 | .0512 |
| 56 | .0349 | .0374 | .0400 | .0419 | 0445 | .0471 | 0497 | .0522 |
| 57 | .0356 | .0382 | .0408 | .0427 | .0454 | .0480 | .0506 | .0531 |
| 58 | .0363 | .0389 | .0416 | 0435 | .0462 | .0488 | .0515 | .0541 |
| 59 | .0370 | .0397 | .0423 | .0443 | .0471 | .0497 | .0524 | .0550 |
| 60 | .0377 | .0404 | .0431 | 0451 | .0479 | .0506 | .0533 | .0560 |

### Spheroids ſtanding.

| Height of the Seg-ment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
|---|---|---|---|---|---|---|---|---|
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | ,85<br>,86<br>,87<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 61 | .0384 | .0411 | .0439 | .0459 | .0487 | .0515 | .0542 | .0570 |
| 62 | .0391 | .0419 | .0447 | .0467 | .0496 | .0524 | .0551 | .0579 |
| 63 | .0398 | .0426 | .0454 | .0475 | .0504 | .0532 | .0560 | .0588 |
| 64 | .0405 | .0434 | .0462 | .0483 | .0513 | .0541 | .0569 | .0598 |
| 65 | .0413 | .0441 | .0470 | .0491 | .0521 | .0550 | .0578 | .0607 |
| 66 | .0420 | .0448 | .0478 | .0500 | .0529 | .0559 | .0588 | .0617 |
| 67 | .0427 | .0456 | .0486 | .0508 | .0538 | .0568 | .0597 | .0626 |
| 68 | .0434 | .0463 | .0493 | .0516 | .0546 | .0576 | .0606 | .0636 |
| 69 | .0441 | .0471 | .0501 | .0524 | .0555 | .0585 | .0615 | .0645 |
| 70 | .0448 | .0478 | .0509 | .0532 | .0563 | .0594 | .0624 | .0655 |
| 71 | .0455 | .0486 | .0517 | .0540 | .0571 | .0603 | .0633 | .0665 |
| 72 | .0463 | .0493 | .0525 | .0548 | .0580 | .0612 | .0642 | .0674 |
| 73 | .0470 | .0501 | .0533 | .0557 | .0588 | .0620 | .0652 | .0683 |
| 74 | .0477 | .0508 | .0541 | .0565 | .0597 | .0629 | .0661 | .0693 |
| 75 | .0485 | .0516 | .0549 | .0573 | .0605 | .0638 | .0670 | .0702 |
| 76 | .0492 | .0524 | .0557 | .0581 | .0614 | .0647 | .0679 | .0712 |
| 77 | .0499 | .0531 | .0565 | .0589 | .0622 | .0656 | .0688 | .0721 |
| 78 | .0506 | .0539 | .0573 | .0598 | .0631 | .0664 | .0698 | .0731 |
| 79 | .0514 | .0546 | .0581 | .0606 | .0639 | .0673 | .0707 | .0740 |
| 80 | .0521 | .0554 | .0589 | .0614 | .0648 | .0682 | .0716 | .0750 |
| 81 | .0529 | .0562 | .0597 | .0622 | .0657 | .0691 | .0725 | .0760 |
| 82 | .0537 | .0570 | .0605 | .0631 | .0666 | .0700 | .0735 | .0769 |
| 83 | .0544 | .0578 | .0614 | .0639 | .0674 | .0709 | .0744 | .0779 |
| 84 | .0552 | .0586 | .0622 | .0648 | .0683 | .0718 | .0753 | .0788 |
| 85 | .0560 | .0594 | .0630 | .0656 | .0692 | .0727 | .0762 | .0798 |
| 86 | .0568 | .0603 | .0638 | .0665 | .0701 | .0737 | .0772 | .0808 |
| 87 | .0576 | .0611 | .0646 | .0673 | .0710 | .0746 | .0781 | .0817 |
| 88 | .0583 | .0619 | .0655 | .0682 | .0718 | .0755 | .0790 | .0827 |
| 89 | .0591 | .0627 | .0663 | .0690 | .0727 | .0764 | .0800 | .0836 |
| 90 | .0599 | .0635 | .0671 | .0699 | .0736 | .0773 | .0809 | .0846 |

Spheroids ſtanding.

| Height of the Seg-ment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
|---|---|---|---|---|---|---|---|---|
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | ,85<br>,86<br>,87<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 91 | .0607 | .0643 | .0679 | .0707 | .0745 | .0782 | .0818 | .0856 |
| 92 | .0614 | .0651 | .0688 | .0716 | .0753 | .0791 | .0828 | .0865 |
| 93 | .0622 | .0659 | .0696 | .0724 | .0762 | .0800 | .0837 | .0875 |
| 94 | .0630 | .0667 | .0704 | .0733 | .0771 | .0809 | .0847 | .0884 |
| 95 | .0638 | .0675 | .0712 | .0741 | .0779 | .0818 | .0856 | .0894 |
| 96 | .0645 | .0683 | .0721 | .0750 | .0788 | .0827 | .0865 | .0904 |
| 97 | .0653 | .0691 | .0729 | .0758 | .0797 | .0836 | .0875 | .0913 |
| 98 | .0661 | .0699 | .0737 | .0767 | .0806 | .0845 | .0884 | .0923 |
| 99 | .0668 | .0707 | .0746 | .0775 | .0814 | .0854 | .0894 | .0932 |
| 100 | .0676 | .0715 | .0754 | .0784 | .0823 | .0863 | .0903 | .0942 |
| 101 | .0684 | .0723 | .0762 | .0793 | .0832 | .0872 | .0912 | .0952 |
| 102 | .0692 | .0731 | .0771 | .0801 | .0841 | .0881 | .0922 | .0961 |
| 103 | .0700 | .0740 | .0779 | .0810 | .0850 | .0891 | .0931 | .0971 |
| 104 | .0708 | .0748 | .0788 | .0818 | .0859 | .0900 | .0941 | .0980 |
| 105 | .0716 | .0756 | .0796 | .0827 | .0867 | .0909 | .0950 | .0990 |
| 106 | .0724 | .0764 | .0805 | .0836 | .0876 | .0918 | .0959 | .1000 |
| 107 | .0732 | .0772 | .0813 | .0844 | .0885 | .0927 | .0969 | .1009 |
| 108 | .0740 | .0781 | .0822 | .0853 | .0894 | .0937 | .0978 | .1019 |
| 109 | .0748 | .0789 | .0830 | .0861 | .0903 | .0946 | .0988 | .1028 |
| 110 | .0756 | .0797 | .0739 | .0870 | .0912 | .0955 | .0997 | .1038 |
| 111 | .0764 | .0805 | .0848 | .0879 | .0921 | .0964 | .1006 | .1048 |
| 112 | .0772 | .0814 | .0856 | .0888 | .0930 | .0973 | .1016 | .1057 |
| 113 | .0781 | .0822 | .0865 | .0896 | .0939 | .0983 | .1025 | .1067 |
| 114 | .0789 | .0831 | .0874 | .0905 | .0948 | .0992 | .1035 | .1077 |
| 115 | .0797 | .0839 | .0882 | .0914 | .0957 | .1001 | .1044 | .1086 |
| 116 | .0805 | .0847 | .0891 | .0923 | .0967 | .1010 | .1053 | .1096 |
| 117 | .0813 | .0856 | .0900 | .0932 | .0976 | .1019 | .1063 | .1106 |
| 118 | .0822 | .0864 | .0909 | .0940 | .0985 | .1029 | .1072 | .1116 |
| 119 | .0830 | .0873 | .0917 | .0949 | .0994 | .1038 | .1082 | .1125 |
| 120 | .0838 | .0881 | .0926 | .0958 | .1003 | .1047 | .1091 | .1135 |

Spheroids ſtanding.

| Height of the Seg-ment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
|---|---|---|---|---|---|---|---|---|
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | ,85<br>,86<br>,87<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 121 | .0847 | .0890 | .0935 | .0967 | .1012 | .1056 | .1101 | .1145 |
| 122 | .0855 | .0899 | .0944 | .0976 | .1021 | .1066 | .1110 | .1155 |
| 123 | .0864 | .0907 | .0952 | .0985 | .1031 | .1075 | .1120 | .1164 |
| 124 | .0872 | .0916 | .0961 | .0994 | .1040 | .1085 | .1129 | .1174 |
| 125 | .0881 | .0925 | .0970 | .1003 | .1049 | .1094 | .1139 | .1184 |
| 126 | .0890 | .0934 | .0979 | .1013 | .1058 | .1103 | .1149 | .1194 |
| 127 | .0898 | .0943 | .0988 | .1022 | .1067 | .1113 | .1158 | .1204 |
| 128 | .0907 | .0951 | .0996 | .1031 | .1077 | .1122 | .1168 | .1213 |
| 129 | .0915 | .0960 | .1005 | .1040 | .1086 | .1132 | .1177 | .1223 |
| 130 | .0924 | .0969 | .1014 | .1049 | .1095 | .1141 | .1187 | .1233 |
| 131 | .0933 | .0978 | .1023 | .1058 | .1104 | .1150 | .1197 | .1243 |
| 132 | .0941 | .0987 | .1032 | .1067 | .1114 | .1160 | .1206 | .1252 |
| 133 | .0950 | .0995 | .1041 | .1076 | .1123 | .1169 | .1216 | .1262 |
| 134 | .0959 | .1004 | .1050 | .1085 | .1132 | .1179 | .1225 | .1272 |
| 135 | .0968 | .1013 | .1059 | .1094 | .1141 | .1188 | .1235 | .1281 |
| 136 | .0976 | .1022 | .1068 | .1104 | .1151 | .1198 | .1245 | .1291 |
| 137 | .0985 | .1031 | .1077 | .1113 | .1160 | .1207 | .1254 | .1301 |
| 138 | .0994 | .1039 | .1086 | .1122 | .1169 | .1217 | .1264 | .1311 |
| 139 | .1002 | .1048 | .1095 | .1131 | .1179 | .1226 | .1273 | .1320 |
| 140 | .1011 | .1057 | .1104 | .1140 | .1188 | .1236 | .1283 | .1330 |
| 141 | .1020 | .1066 | .1113 | .1149 | .1197 | .1245 | .1293 | .1340 |
| 142 | .1028 | .1075 | .1122 | .1158 | .1207 | .1255 | .1302 | .1350 |
| 143 | .1037 | .1084 | .1131 | .1167 | .1216 | .1264 | .1312 | .1359 |
| 144 | .1045 | .1093 | .1140 | .1176 | .1225 | .1274 | .1321 | .1369 |
| 145 | .1054 | .1101 | .1149 | .1185 | .1234 | .1283 | .1331 | .1379 |
| 146 | .1063 | .1110 | .1159 | .1195 | .1244 | .1292 | .1341 | .1389 |
| 147 | .1071 | .1119 | .1168 | .1204 | .1253 | .1302 | .1350 | .1399 |
| 148 | .1080 | .1128 | .1177 | .1213 | .1262 | .1311 | .1360 | .1408 |
| 149 | .1088 | .1137 | .1186 | .1222 | .1272 | .1321 | .1369 | .1418 |
| 150 | .1097 | .1146 | .1195 | .1231 | .1281 | .1330 | .1379 | .1428 |

| Spheroids ſtanding. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Height of the Seg-ment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | ,85<br>,86<br>,87<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 151 | .1106 | .1155 | .1204 | .1240 | .1290 | .1340 | .1389 | .1438 |
| 152 | .1115 | .1164 | .1214 | .1250 | .1300 | .1349 | .1398 | .1448 |
| 153 | .1124 | .1174 | .1223 | .1259 | .1309 | .1359 | .1408 | .1457 |
| 154 | .1133 | .1183 | .1232 | .1269 | .1319 | .1368 | .1418 | .1467 |
| 155 | .1143 | .1192 | .1241 | .1278 | .1328 | .1378 | .1427 | .1477 |
| 156 | .1152 | .1201 | .1251 | .1287 | .1338 | .1388 | .1437 | .1487 |
| 157 | .1161 | .1210 | .1260 | .1297 | .1347 | .1397 | .1447 | .1497 |
| 158 | .1170 | .1220 | .1269 | .1306 | .1357 | .1407 | .1457 | .1506 |
| 159 | .1179 | .1229 | .1279 | .1316 | .1366 | .1416 | .1466 | .1516 |
| 160 | .1188 | .1238 | .1288 | .1325 | .1376 | .1426 | .1476 | .1526 |
| 161 | .1197 | .1247 | .1297 | .1335 | .1386 | .1436 | .1486 | .1536 |
| 162 | .1207 | .1257 | .1307 | .1344 | .1395 | .1445 | .1496 | .1546 |
| 163 | .1216 | .1266 | .1316 | .1354 | .1405 | .1455 | .1505 | .1556 |
| 164 | .1226 | .1276 | .1326 | .1364 | .1414 | .1465 | .1515 | .1566 |
| 165 | .1235 | .1285 | .1335 | .1373 | .1424 | .1474 | .1525 | .1575 |
| 166 | .1244 | .1294 | .1344 | .1383 | .1434 | .1484 | .1535 | .1585 |
| 167 | .1254 | .1304 | .1354 | .1392 | .1443 | .1494 | .1545 | .1595 |
| 168 | .1263 | .1313 | .1363 | .1402 | .1453 | .1504 | .1554 | .1605 |
| 169 | .1273 | .1323 | .1373 | .1411 | .1462 | .1513 | .1564 | .1615 |
| 170 | .1282 | .1332 | .1382 | .1421 | .1472 | .1523 | .1574 | .1625 |
| 171 | .1291 | .1341 | .1391 | .1430 | .1482 | .1533 | .1584 | .1635 |
| 172 | .1301 | .1351 | .1401 | .1440 | .1491 | .1542 | .1594 | .1645 |
| 173 | .1310 | .1360 | .1410 | .1449 | .1501 | .1552 | .1603 | .1655 |
| 174 | .1319 | .1370 | .1420 | .1459 | .1510 | .1562 | .1613 | .1665 |
| 175 | .1329 | .1379 | .1429 | .1468 | .1520 | .1571 | .1623 | .1674 |
| 176 | .1338 | .1388 | .1439 | .1478 | .1530 | .1581 | .1633 | .1684 |
| 177 | .1347 | .1398 | .1448 | .1487 | .1539 | .1591 | .1643 | .1694 |
| 178 | .1356 | .1407 | .1458 | .1497 | .1549 | .1601 | .1652 | .1704 |
| 179 | .1366 | .1417 | .1467 | .1506 | .1558 | .1610 | .1662 | .1714 |
| 180 | .1375 | .1426 | .1477 | .1516 | .1568 | .1620 | .1672 | .1724 |

## Spheroids ſtanding.

| Heigh. of the Segment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
|---|---|---|---|---|---|---|---|---|
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | ,85<br>,86<br>,87<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
| | Seg | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 181 | .1385 | .1436 | .1487 | .1526 | .1578 | .1630 | .1682 | .1734 |
| 182 | .1394 | .1445 | .1496 | .1535 | .1588 | .1640 | .1692 | .1744 |
| 183 | .1404 | .1455 | .1506 | .1545 | .1597 | .1650 | .1702 | .1754 |
| 184 | .1413 | .1464 | .1516 | .1555 | .1607 | .1660 | .1712 | .1764 |
| 185 | .1423 | .1474 | .1525 | .1564 | .1617 | .1669 | .1721 | .1773 |
| 186 | .1432 | .1484 | .1535 | .1574 | .1627 | .1679 | .1731 | .1783 |
| 187 | .1442 | .1493 | .1545 | .1584 | .1637 | .1689 | .1741 | .1793 |
| 188 | .1451 | .1503 | .1555 | .1594 | .1646 | .1699 | .1751 | .1803 |
| 189 | .1461 | .1512 | .1564 | .1603 | .1656 | .1709 | .1761 | .1813 |
| 190 | .1470 | .1522 | .1574 | .1613 | .1666 | .1719 | .1771 | .1823 |
| 191 | .1480 | .1532 | .1584 | .1623 | .1676 | .1729 | .1781 | .1833 |
| 192 | .1490 | .1542 | .1594 | .1633 | .1686 | .1739 | .1791 | .1843 |
| 193 | .1499 | .1551 | .1603 | .1643 | .1696 | .1749 | .1801 | .1853 |
| 194 | .1509 | .1561 | .1613 | .1653 | .1706 | .1759 | .1811 | .1863 |
| 195 | .1519 | .1571 | .1623 | .1662 | .1715 | .1708 | .1820 | .1872 |
| 196 | .1529 | .1581 | .1633 | .1672 | .1725 | .1778 | .1830 | .1882 |
| 197 | .1539 | .1591 | .1643 | .1682 | .1735 | .1788 | .1840 | .1892 |
| 198 | .1548 | .1600 | .1652 | .1692 | .1745 | .1798 | .1850 | .1902 |
| 199 | .1558 | .1610 | .1662 | .1702 | .1755 | .1808 | .1860 | .1912 |
| 200 | .1568 | .1620 | .1672 | .1712 | .1765 | .1818 | .1870 | .1922 |
| 20 | .1578 | .1630 | .1682 | .1722 | .1775 | .1828 | .1880 | .1932 |
| 202 | .1588 | .1640 | .1692 | .1732 | .1785 | .1838 | .1890 | .1942 |
| 203 | .1597 | .1649 | .1702 | .1741 | .1794 | .1848 | .1900 | .1952 |
| 204 | .1607 | .1659 | .1712 | .1751 | .1804 | .1858 | .1910 | .1962 |
| 205 | .1617 | .1669 | .1721 | .1761 | .1814 | .1867 | .1920 | .1972 |
| 206 | .1627 | .1679 | .1731 | .1771 | .1824 | .1877 | .1930 | .1982 |
| 207 | .1637 | .1689 | .1741 | .1781 | .1834 | .1887 | .1940 | .1992 |
| 208 | .1646 | .1698 | .1751 | .1790 | .1843 | .1897 | .1950 | .2002 |
| 209 | .1656 | .1708 | .1761 | .1800 | .1853 | .1907 | .1960 | .2012 |
| 210 | .1666 | .1718 | .1771 | .1810 | .1863 | .1917 | .1970 | .2022 |

Spheroids ſtanding.

| Height of the Seg-ment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
|---|---|---|---|---|---|---|---|---|
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | ,85<br>,86<br>,87<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 211 | .1676 | .1728 | .1781 | .1820 | .1873 | .1927 | .1980 | .2032 |
| 212 | .1686 | .1738 | .1791 | .1830 | .1883 | .1937 | .1990 | .2042 |
| 213 | .1697 | .1749 | .1801 | .1841 | .1894 | .1947 | .2000 | .2052 |
| 214 | .1707 | .1759 | .1811 | .1851 | .1904 | .1957 | .2010 | .2062 |
| 215 | .1717 | .1769 | .1821 | .1861 | .1914 | .1967 | .2020 | .2072 |
| 216 | .1727 | .1779 | .1832 | .1871 | .1924 | .1978 | .2030 | .2082 |
| 217 | .1737 | .1789 | .1842 | .1881 | .1934 | .1988 | .2040 | .2092 |
| 218 | .1748 | .1800 | .1852 | .1892 | .1945 | .1998 | .2050 | .2102 |
| 219 | .1758 | .1810 | .1862 | .1902 | .1955 | .2008 | .2060 | .2112 |
| 220 | .1768 | .1820 | .1872 | .1912 | .1965 | .2018 | .2070 | .2122 |
| 221 | .1778 | .1830 | .1882 | .1922 | .1975 | .2028 | .2080 | .2132 |
| 222 | .1788 | .1840 | .1892 | .1932 | .1985 | .2038 | .2090 | .2142 |
| 223 | .1799 | .1851 | .1902 | .1942 | .1995 | .2048 | .2100 | .2152 |
| 224 | .1809 | .1861 | .1912 | .1952 | .2005 | .2058 | .2110 | .2162 |
| 225 | .1819 | .1871 | .1922 | .1962 | .2015 | .2068 | .2120 | .2172 |
| 226 | .1829 | .1881 | .1933 | .1973 | .2026 | .2079 | .2131 | .2183 |
| 227 | .1839 | .1891 | .1943 | .1983 | .2036 | .2089 | .2141 | .2193 |
| 228 | .1850 | .1902 | .1953 | .1993 | .2046 | .2099 | .2151 | .2203 |
| 229 | .1860 | .1912 | .1963 | .2003 | .2056 | .2109 | .2161 | .2213 |
| 230 | .1870 | .1922 | .1973 | .2013 | .2066 | .2119 | .2171 | .2223 |
| 231 | .1880 | .1932 | .1983 | .2023 | .2076 | .2129 | .2181 | .2233 |
| 232 | .1891 | .1942 | .1994 | .2033 | .2086 | .2139 | .2191 | .2243 |
| 233 | .1901 | .1953 | .2004 | .2044 | .2096 | .2149 | .2201 | .2253 |
| 234 | .1911 | .1963 | .2014 | .2054 | .2106 | .2159 | .2211 | .2263 |
| 235 | .1922 | .1973 | .2024 | .2064 | .2116 | .2169 | .2221 | .2273 |
| 236 | .1932 | .1983 | .2035 | .2074 | .2127 | .2180 | .2232 | .2283 |
| 237 | .1942 | .1993 | .2045 | .2084 | .2137 | .2190 | .2242 | .2293 |
| 238 | .1952 | .2004 | .2055 | .2095 | .2147 | .2200 | .2252 | .2303 |
| 239 | .1963 | .2014 | .2066 | .2105 | .2157 | .2210 | .2262 | .2313 |
| 240 | .1973 | .2024 | .2076 | .2115 | .2167 | .2220 | .2272 | .2323 |

Spheroids ſtanding.

| Height of the Segment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
|---|---|---|---|---|---|---|---|---|
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | ,85<br>,86<br>,87<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 241 | .1983 | .2034 | .2086 | .2125 | .2177 | .2230 | .2282 | .2333 |
| 242 | .1994 | .2045 | .2097 | .2136 | .2188 | .2240 | .2292 | .2343 |
| 243 | .2004 | .2055 | .2107 | .2146 | .2198 | .2250 | .2302 | .2353 |
| 244 | .2014 | .2066 | .2118 | .2156 | .2208 | .2260 | .2312 | .2363 |
| 245 | .2025 | .2076 | .2128 | .2166 | .2218 | .2270 | .2322 | .2373 |
| 246 | .2035 | .2086 | .2138 | .2177 | .2229 | .2281 | .2333 | .2384 |
| 247 | .2046 | .2097 | .2149 | .2187 | .2239 | .2291 | .2343 | .2394 |
| 248 | .2056 | .2107 | .2159 | .2197 | .2249 | .2301 | .2353 | .2404 |
| 249 | .2067 | .2118 | .2170 | .2208 | .2260 | .2311 | .2363 | .2414 |
| 250 | .2077 | .2128 | .2180 | .2218 | .2270 | .2321 | .2373 | .2424 |
| 251 | .2088 | .2139 | .2190 | .2228 | .2280 | .2331 | .2383 | .2434 |
| 252 | .2098 | .2149 | .2201 | .2239 | .2291 | .2342 | .2393 | .2444 |
| 253 | .2109 | .2160 | .2211 | .2249 | .2301 | .2352 | .2404 | .2454 |
| 254 | .2120 | .2170 | .2221 | .2260 | .2311 | .2362 | .2414 | .2464 |
| 255 | .2130 | .2181 | .2232 | .2270 | .2321 | .2372 | .2424 | .2474 |
| 256 | .2141 | .2192 | .2242 | .2280 | .2332 | .2383 | .2434 | .2485 |
| 257 | .2152 | .2202 | .2253 | .2291 | .2342 | .2393 | .2444 | .2495 |
| 258 | .2163 | .2213 | .2263 | .2301 | .2352 | .2403 | .2455 | .2505 |
| 259 | .2173 | .2223 | .2274 | .2312 | .2363 | .2414 | .2465 | .2515 |
| 260 | .2184 | .2234 | .2284 | .2322 | .2373 | .2424 | .2475 | .2525 |
| 261 | .2195 | .2245 | .2295 | .2333 | .2383 | .2434 | .2485 | .2535 |
| 262 | .2206 | .2256 | .2305 | .2343 | .2394 | .2445 | .2496 | .2545 |
| 263 | .2217 | .2266 | .2316 | .2354 | .2404 | .2455 | .2506 | .2556 |
| 264 | .2228 | .2277 | .2327 | .2364 | .2415 | .2466 | .2516 | .2566 |
| 265 | .2238 | .2288 | .2337 | .2375 | .2426 | .2476 | .2526 | .2576 |
| 266 | .2249 | .2299 | .2348 | .2386 | .2436 | .2486 | .2537 | .2586 |
| 267 | .2260 | .2310 | .2359 | .2396 | .2446 | .2497 | .2547 | .2596 |
| 268 | .2271 | .2320 | .2370 | .2407 | .2457 | .2507 | .2557 | .2607 |
| 269 | .2282 | .2331 | .2380 | .2417 | .2467 | .2518 | .2568 | .2617 |
| 270 | .2203 | .2342 | .2391 | .2428 | .2478 | .2528 | .2578 | .2627 |

Spheroids ſtanding.

| Height of the Segment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
|---|---|---|---|---|---|---|---|---|
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | ,85<br>,86<br>,87<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 271 | .2304 | .2353 | .2402 | .2439 | .2488 | .2538 | .2588 | .2637 |
| 272 | .2315 | .2364 | .2412 | .2449 | .2499 | .2549 | .2598 | .2647 |
| 273 | .2329 | .2374 | .2423 | .2460 | .2509 | .2559 | .2609 | .2657 |
| 274 | .2337 | .2385 | .2433 | .2470 | .2520 | .2570 | .2619 | .2667 |
| 275 | .2347 | .2396 | .2444 | .2481 | .2531 | .2580 | .2629 | .2677 |
| 276 | .2358 | .2407 | .2455 | .2492 | .2541 | .2590 | .2639 | .2688 |
| 277 | .2369 | .2418 | .2465 | .2502 | .2551 | .2601 | .2649 | .2698 |
| 278 | .2380 | 2428 | .2476 | .2513 | .2562 | .2611 | .2660 | .2708 |
| 279 | .2391 | .2439 | .2486 | .2523 | .2572 | .2622 | .2670 | .2718 |
| 280 | .2402 | .2450 | .2497 | .2534 | .2583 | .2632 | .2680 | .2728 |
| 281 | .2413 | .2461 | .2508 | .2545 | .2593 | 2642 | .2690 | .2738 |
| 282 | .2424 | .2471 | .2519 | .2555 | .2604 | .2653 | .2701 | .2748 |
| 283 | .2435 | .2482 | .2529 | .2566 | .2614 | .2663 | .2711 | .2759 |
| 284 | .2446 | .2493 | .2540 | .2576 | .2625 | .2674 | .2721 | .2769 |
| 285 | 2456 | .2503 | .2551 | .2587 | 2636 | .2684 | .2731 | .2779 |
| 286 | .2467 | .2514 | .2562 | .2598 | .2646 | .2694 | .2742 | .2789 |
| 287 | .2478 | .2525 | .2573 | .2608 | .2656 | .2705 | .2752 | .2799 |
| 288 | .2489 | .2536 | .2583 | .2619 | .2667 | .2715 | .2762 | .2810 |
| 289 | .2500 | .2546 | .2594 | .2629 | .2677 | .2726 | .2773 | .2820 |
| 290 | .2511 | .2557 | .2605 | .2640 | .2688 | .2736 | .2783 | .2830 |
| 291 | .2522 | 2568 | .2616 | .2651 | .2699 | .2746 | .2793 | .2840 |
| 292 | .2533 | .2579 | .2627 | .2662 | .2709 | .2757 | .2804 | .2850 |
| 293 | .2544 | .2590 | .2637 | .2672 | .2720 | .2767 | .2814 | .2861 |
| 294 | .2555 | .2601 | .2648 | .2683 | .2730 | .2778 | .2824 | .2871 |
| 295 | .2566 | .2612 | .2659 | .2694 | .2741 | .2788 | .2834 | .2881 |
| 296 | .2578 | .2623 | .2669 | .2705 | .2752 | .2798 | .2845 | .2891 |
| 297 | .2589 | .2634 | .2681 | .2716 | .2762 | .2809 | .2855 | .2901 |
| 298 | .2600 | .2645 | .2691 | .2726 | .2773 | .2819 | .2865 | .2912 |
| 299 | .2611 | 2656 | .2702 | 2737 | .2783 | .2830 | .2876 | .2922 |
| 300 | .2622 | .2667 | .2713 | .2748 | .2794 | .2840 | .2886 | .2932 |

| Spheroids ſtanding. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Height of the Segment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | ,85<br>,86<br>,87<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 301 | .2633 | .2678 | .2724 | .2759 | .2805 | .2850 | .2896 | .2942 |
| 302 | .2644 | .2689 | .2735 | .2769 | .2815 | .2861 | .2907 | .2952 |
| 303 | .2655 | .2700 | .2746 | .2780 | .2826 | .2871 | .2917 | .2963 |
| 304 | .2666 | .2711 | .2757 | .2791 | .2836 | .2882 | .2928 | .2973 |
| 305 | .2677 | .2722 | .2767 | .2801 | .2847 | .2893 | .2938 | .2983 |
| 306 | .2689 | .2733 | .2778 | .2812 | .2858 | .2903 | .2948 | .2993 |
| 307 | .2700 | .2744 | .2789 | .2823 | .2868 | .2913 | .2959 | .3003 |
| 308 | .2711 | .2755 | .2800 | .2834 | .2879 | .2924 | .2969 | .3014 |
| 309 | .2722 | .2766 | .2811 | .2844 | .2889 | .2934 | .2980 | .3024 |
| 310 | .2733 | .2777 | .2822 | .2855 | .2900 | .2945 | .2990 | .3034 |
| 311 | .2744 | .2788 | .2833 | .2866 | .2911 | .2956 | .3000 | .3044 |
| 312 | .2755 | .2799 | .2844 | .2877 | .2922 | .2966 | .3011 | .3055 |
| 313 | 2767 | .2811 | .2855 | .2888 | .2932 | .2977 | .3021 | .3065 |
| 314 | .2779 | .2822 | .2866 | .2899 | .2943 | .2987 | .3032 | .3075 |
| 315 | .2790 | .2833 | .2877 | .2909 | .2954 | .2998 | .3042 | .3085 |
| 316 | .2801 | .2844 | .2888 | .2920 | .2965 | .3009 | .3052 | .3096 |
| 317 | .2813 | .2855 | .2899 | .2931 | .2976 | .3019 | .3063 | .3106 |
| 318 | .2824 | .2867 | .2910 | .2942 | .2986 | .3030 | .3073 | .3116 |
| 319 | .2836 | .2878 | .2921 | .2953 | .2997 | .3040 | .3084 | .3127 |
| 320 | .2847 | .2889 | .2932 | .2964 | .3008 | .3051 | .3094 | .3137 |
| 321 | .2859 | .2900 | .2943 | .2975 | .3019 | .3062 | .3104 | .3147 |
| 322 | .2870 | 2912 | .2954 | .2986 | .3030 | .3072 | .3115 | .3157 |
| 323 | .2882 | .2923 | .2965 | .2997 | .3040 | .3083 | .3125 | .3168 |
| 324 | .2893 | .2935 | .2976 | .3008 | .3051 | .3094 | .3136 | .3178 |
| 325 | .2905 | .2946 | .2987 | .3019 | .3062 | .3104 | .3147 | .3188 |
| 326 | .2917 | .2957 | .2999 | .3031 | .3073 | .3115 | .3157 | .3198 |
| 327 | .2928 | 2969 | .3010 | .3042 | .3084 | .3126 | .3167 | .3208 |
| 328 | .2940 | .2980 | .3021 | .3053 | .3094 | .3137 | .3178 | .3219 |
| 329 | .2951 | .2992 | .3032 | .3064 | .3105 | .3147 | .3188 | .3229 |
| 330 | .2963 | .3003 | .3043 | .3075 | .3116 | .3158 | .3199 | .3239 |

Spheroids ſtanding.

| Height of the Segment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
|---|---|---|---|---|---|---|---|---|
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | ,85<br>,86<br>,87<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 331 | .2974 | .3014 | .3054 | .3086 | .3127 | .3168 | .3209 | .3249 |
| 332 | .2986 | .3025 | .3065 | .3097 | .3137 | .3179 | .3220 | .3200 |
| 333 | .2997 | .3037 | .3076 | .3108 | .3148 | .3189 | .3230 | .3270 |
| 334 | .3008 | .3048 | .3087 | .3119 | .3159 | .3200 | .3241 | .3280 |
| 335 | .3019 | .3059 | .3098 | .3129 | .3169 | .3211 | .3251 | .3290 |
| 336 | .3031 | .3070 | .3110 | .3140 | .3180 | .3221 | .3261 | .3301 |
| 337 | .3042 | .3081 | .3121 | .3151 | .3191 | .3231 | .3272 | .3311 |
| 338 | .3053 | .3093 | .3132 | .3162 | .3202 | .3242 | .3282 | .3321 |
| 339 | .3065 | .3104 | .3143 | .3173 | .3212 | .3252 | .3293 | .3332 |
| 340 | .3076 | .3115 | .3154 | .3184 | .3223 | .3263 | .3303 | .3342 |
| 341 | .3088 | .3126 | .3165 | .3195 | .3234 | .3274 | .3313 | .3352 |
| 342 | .3099 | .3138 | .3177 | .3206 | .3245 | .3284 | .3324 | .3363 |
| 343 | .3111 | .3149 | .3188 | .3217 | .3256 | .3295 | .3334 | .3373 |
| 344 | .3122 | .3161 | .3199 | .3228 | .3267 | .3306 | .3345 | .3383 |
| 345 | .3134 | .3172 | .3210 | .3239 | .3277 | .3316 | .3355 | .3393 |
| 346 | .3146 | .3183 | .3222 | .3250 | .3288 | .3327 | .3365 | .3404 |
| 347 | .3157 | .3195 | .3233 | .3261 | .3299 | .3338 | .3376 | .3414 |
| 348 | .3169 | .3206 | .3244 | .3272 | .3310 | .3349 | .3386 | .3424 |
| 349 | .3180 | .3218 | .3256 | .3283 | .3321 | .3359 | .3397 | .3435 |
| 350 | .3192 | .3229 | .3267 | .3294 | .3332 | .3370 | .3407 | .3445 |
| 351 | .3204 | .3241 | .3278 | .3305 | .3343 | .3381 | .3418 | .3455 |
| 352 | .3216 | .3252 | .3290 | .3316 | .3354 | .3391 | .3428 | .3466 |
| 353 | .3227 | .3264 | .3301 | .3328 | .3365 | .3402 | .3439 | .3476 |
| 354 | .3239 | .3275 | .3312 | .3339 | .3376 | .3413 | .3449 | .3486 |
| 355 | .3251 | .3287 | .3323 | .3350 | .3387 | .3423 | .3460 | .3496 |
| 356 | .3263 | .3299 | .3335 | .3361 | .3398 | .3434 | .3471 | .3507 |
| 357 | .3275 | .3310 | .3346 | .3372 | .3409 | .3445 | .3481 | .3517 |
| 358 | .3286 | .3322 | .3357 | .3384 | .3420 | .3456 | .3492 | .3527 |
| 359 | .3298 | .3333 | .3369 | .3395 | .3431 | .3466 | .3502 | .3538 |
| 360 | .3310 | .3345 | .3380 | .3406 | .3442 | .3477 | .3513 | .3548 |

## Spheroids ſtanding.

| Height of the Seg-ment. | 1 Var | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
|---|---|---|---|---|---|---|---|---|
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | ,85<br>,86<br>,87<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95<br>,96 |
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 361 | ·3322 | ·3356 | ·3391 | ·3417 | ·3453 | ·3488 | ·3523 | ·3558 |
| 362 | ·3334 | ·3368 | ·3403 | ·3428 | ·3464 | ·3499 | ·3534 | ·3569 |
| 363 | ·3345 | ·3379 | ·3414 | ·3440 | ·3475 | ·3509 | 3544 | ·3579 |
| 364 | ·3357 | ·3391 | ·3425 | ·3451 | ·3486 | ·3520 | ·3555 | ·3589 |
| 365 | ·3369 | ·3402 | ·3436 | ·3462 | ·3497 | ·3531 | ·3566 | ·3599 |
| 366 | ·3381 | ·3414 | ·3448 | ·3473 | ·3508 | ·3542 | ·3576 | ·3610 |
| 367 | ·3393 | ·3425 | ·3459 | ·3484 | ·3519 | ·3553 | 3586 | ·3620 |
| 368 | ·3404 | ·3437 | ·3470 | ·3496 | ·3530 | ·3563 | ·3597 | ·3630 |
| 369 | ·3416 | ·3448 | ·3482 | ·3507 | ·3541 | ·3574 | ·3607 | ·3641 |
| 370 | ·3428 | ·3460 | ·3493 | ·3518 | ·3552 | ·3585 | ·3618 | ·3651 |
| 371 | ·3440 | ·3472 | ·3504 | ·3529 | ·3563 | ·3596 | 3629 | ·3661 |
| 372 | ·3452 | ·3483 | ·3516 | ·3540 | ·3574 | ·3607 | 3639 | ·3672 |
| 373 | ·3463 | ·3495 | ·3527 | ·3552 | ·3585 | ·3617 | ·3650 | ·3682 |
| 374 | ·3475 | ·3506 | ·3539 | ·3563 | ·3596 | ·3628 | ·3660 | ·3692 |
| 375 | ·3487 | ·3518 | ·3550 | ·3574 | ·3606 | ·3639 | ·3671 | ·3702 |
| 376 | ·3499 | ·3530 | ·3561 | ·3585 | ·3617 | ·3650 | ·3682 | ·3713 |
| 377 | ·3511 | ·3541 | ·3573 | ·3596 | ·3628 | ·3661 | ·3692 | ·3723 |
| 378 | ·3522 | ·3553 | ·3584 | ·3608 | ·3639 | ·3671 | ·3703 | ·3733 |
| 379 | ·3534 | ·3564 | ·3596 | ·3619 | ·3650 | ·3682 | ·3713 | ·3744 |
| 380 | ·3546 | ·3576 | ·3607 | ·3630 | ·3661 | ·3693 | ·3724 | ·3754 |
| 381 | ·3558 | ·3588 | ·3618 | ·3641 | ·3672 | ·3704 | ·3734 | ·3764 |
| 382 | ·3570 | ·3599 | ·3630 | ·3652 | ·3683 | ·3714 | ·3745 | ·3775 |
| 383 | ·3581 | ·3611 | ·3641 | ·3664 | ·3694 | ·3725 | ·3755 | ·3785 |
| 384 | ·3593 | ·3622 | ·3653 | ·3675 | ·3705 | ·3735 | ·3766 | ·3796 |
| 385 | ·3605 | ·3634 | ·3664 | ·3686 | ·3716 | ·3746 | ·3777 | ·3806 |
| 386 | ·3617 | ·3646 | ·3675 | ·3697 | ·3727 | ·3757 | ·3787 | ·3816 |
| 387 | ·3629 | ·3657 | ·3687 | ·3708 | ·3738 | ·3768 | 3797 | ·3827 |
| 388 | ·3640 | ·3669 | ·3698 | ·3720 | ·3749 | ·3779 | ·3808 | ·3837 |
| 389 | ·3652 | ·3680 | ·3710 | ·3731 | ·3760 | ·3789 | ·3818 | ·3848 |
| 390 | ·3664 | ·3692 | ·3721 | ·3742 | ·3771 | ·3800 | ·3829 | ·3858 |

## Spheroids ſtanding.

| Height of the Segment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
|---|---|---|---|---|---|---|---|---|
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | ,85<br>,86<br>,87<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 391 | .3676 | .3704 | .3732 | .3753 | .3782 | .3811 | .3840 | .3868 |
| 392 | .3688 | .3716 | .3744 | .3765 | .3793 | .3822 | .3850 | .3879 |
| 393 | .3700 | .3727 | .3755 | .3776 | .3804 | .3833 | .3861 | .3889 |
| 394 | .3712 | .3739 | .3767 | .3788 | .3815 | .3844 | .3871 | .3899 |
| 395 | .3724 | .3751 | .3778 | .3799 | .3826 | .3854 | .3882 | .3909 |
| 396 | .3736 | .3763 | .3790 | .3810 | .3838 | .3865 | .3893 | .3920 |
| 397 | .3748 | .3775 | .3801 | .3822 | .3849 | .3876 | .3903 | .3930 |
| 398 | .3760 | .3786 | .3813 | .3833 | .3860 | .3887 | .3914 | .3940 |
| 399 | .3772 | .3798 | .3824 | .3845 | .3871 | .3898 | .3924 | .3951 |
| 400 | .3784 | .3810 | .3836 | .3856 | .3882 | .3909 | .3935 | .3961 |
| 401 | .3796 | .3822 | .3847 | .3867 | .3893 | .3920 | .3946 | .3971 |
| 402 | .3808 | .3834 | .3859 | .3879 | .3904 | .3931 | .3956 | .3982 |
| 403 | .3820 | .3845 | .3870 | .3890 | .3915 | .3941 | .3967 | .3992 |
| 404 | .3832 | .3857 | .3882 | .3901 | .3926 | .3952 | .3977 | .4003 |
| 405 | .3844 | .3869 | .3893 | .3912 | .3937 | .3963 | .3988 | .4013 |
| 406 | .3856 | .3881 | .3905 | .3924 | .3949 | .3974 | .3999 | .4023 |
| 407 | .3868 | .3893 | .3916 | .3935 | .3960 | .3985 | .4009 | .4034 |
| 408 | .3880 | .3904 | .3928 | .3946 | .3971 | .3995 | .4020 | .4044 |
| 409 | .3892 | .3916 | .3939 | .3958 | .3982 | .4006 | .4030 | .4055 |
| 410 | .3904 | .3928 | .3951 | .3969 | .3993 | .4017 | .4041 | .4065 |
| 411 | .3916 | .3940 | .3963 | .3980 | .4004 | .4028 | .4052 | .4075 |
| 412 | .3928 | .3952 | .3974 | .3992 | .4015 | .4039 | .4062 | .4086 |
| 413 | .3940 | .3963 | .3986 | .4003 | .4026 | .4050 | .4073 | .4096 |
| 414 | .3952 | .3975 | .3997 | .4015 | .4037 | .4061 | .4083 | .4106 |
| 415 | .3965 | .3987 | .4009 | .4026 | .4048 | .4071 | .4094 | .4116 |
| 416 | .3977 | .3999 | .4021 | .4037 | .4060 | .4082 | .4105 | .4127 |
| 417 | .3989 | .4011 | .4032 | .4049 | .4071 | .4093 | .4115 | .4137 |
| 418 | .4001 | .4022 | .4044 | .4060 | .4082 | .4104 | .4126 | .4147 |
| 419 | .4013 | .4034 | .4055 | .4072 | .4093 | .4115 | .4136 | .4158 |
| 420 | .4025 | .4046 | .4067 | .4083 | .4104 | .4126 | .4147 | .4168 |

| Spheroids ſtanding. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Height of the Segment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | ,85<br>,86<br>,87<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 421 | .4037 | .4058 | .4079 | .4094 | .4115 | .4137 | .4158 | .4178 |
| 422 | .4049 | .4069 | .4090 | .4106 | .4126 | .4148 | .4168 | .4189 |
| 423 | .4061 | .4081 | .4102 | .4117 | .4137 | .4158 | .4179 | .4199 |
| 424 | .4073 | .4093 | .4113 | .4128 | .4148 | .4169 | .4189 | .4210 |
| 425 | .4085 | .4104 | .4125 | .4139 | .4159 | .4180 | .4200 | .4220 |
| 426 | .4097 | .4116 | .4137 | .4151 | .4171 | .4191 | .4211 | .4230 |
| 427 | .4109 | .4128 | .4148 | .4162 | .4182 | .4202 | .4221 | .4241 |
| 428 | .4121 | .4140 | .4160 | .4173 | .4193 | .4212 | .4232 | .4251 |
| 429 | .4133 | .4151 | .4171 | .4185 | .4204 | .4223 | .4242 | .4262 |
| 430 | .4145 | .4163 | .4183 | .4196 | .4215 | .4234 | .4253 | .4272 |
| 431 | .4157 | .4175 | .4195 | .4207 | .4226 | .4245 | .4264 | .4282 |
| 432 | .4169 | .4187 | .4206 | .4219 | .4238 | .4256 | .4274 | .4293 |
| 433 | .4182 | .4199 | .4218 | .4230 | .4249 | .4267 | .4285 | .4303 |
| 434 | .4194 | .4211 | .4229 | .4242 | .4260 | .4278 | .4296 | .4314 |
| 435 | .4206 | .4223 | .4241 | .4253 | .4271 | .4289 | .4306 | .4324 |
| 436 | .4218 | .4235 | .4253 | .4265 | .4283 | .4300 | .4317 | .4334 |
| 437 | .4230 | .4247 | .4264 | .4276 | .4294 | .4311 | .4328 | .4345 |
| 438 | .4243 | .4259 | .4276 | .4288 | .4305 | .4322 | .4339 | .4355 |
| 439 | .4255 | .4271 | .4287 | .4299 | .4317 | .4333 | .4349 | .4366 |
| 440 | .4267 | .4283 | .4299 | .4311 | .4328 | .4344 | .4360 | .4376 |
| 441 | .4279 | .4295 | .4311 | .4322 | .4339 | .4355 | .4371 | .4386 |
| 442 | .4291 | .4307 | .4322 | .4334 | .4350 | .4366 | .4381 | .4397 |
| 443 | .4303 | .4318 | .4334 | .4345 | .4361 | .4377 | .4392 | .4407 |
| 444 | .4315 | .4330 | .4345 | .4357 | .4372 | .4388 | .4402 | .4418 |
| 445 | .4327 | .4342 | .4357 | .4368 | .4383 | .4398 | .4413 | .4428 |
| 446 | .4340 | .435 | .4369 | .4379 | .4395 | .4409 | .4424 | .4438 |
| 447 | .4352 | .4366 | .4380 | .4391 | .4406 | .4420 | .4434 | .4449 |
| 448 | .4364 | .4377 | .4392 | .4402 | .4417 | .4431 | .4445 | .4459 |
| 449 | .4376 | .4389 | .4403 | .4414 | .4428 | .4442 | .4455 | .4470 |
| 450 | .4388 | .440 | .4415 | .4425 | .4439 | .4453 | .4466 | .4480 |

Spheroids ſtanding.

| Height of the Segment. | 1 Var | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
|---|---|---|---|---|---|---|---|---|
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | ,85<br>,86<br>,87<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95<br>,96 |
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 451 | .4400 | .4413 | .4427 | .4436 | .4450 | .4464 | .4477 | .4490 |
| 452 | .4412 | .4425 | .4438 | .4448 | .4461 | .4475 | .4487 | .4501 |
| 453 | .4425 | .4437 | .4450 | .4459 | .4473 | .4486 | .4498 | .4511 |
| 454 | .4437 | .4449 | .4462 | .4471 | .4484 | .4497 | .4509 | .4522 |
| 455 | .4449 | .4461 | .4473 | .4482 | .4495 | .4507 | .4519 | .4532 |
| 456 | .4461 | .4473 | .4485 | .4494 | .4506 | .4518 | .4530 | .4542 |
| 457 | .4473 | .4485 | .4497 | .4505 | .4517 | .4529 | .4541 | .4553 |
| 458 | .4486 | .4497 | .4509 | .4517 | .4529 | .4540 | .4552 | .4563 |
| 459 | .4498 | .4509 | .4520 | .4528 | .4540 | .4551 | .4562 | .4574 |
| 460 | .4510 | .4521 | .4532 | .4540 | .4551 | .4562 | .4573 | .4584 |
| 461 | .4522 | .4533 | .4544 | .4551 | .4562 | .4573 | .4584 | .4594 |
| 462 | .4535 | .4545 | .4555 | .4563 | .4573 | .4584 | .4594 | .4605 |
| 463 | .4547 | .4557 | .4567 | .4574 | .4585 | .4595 | .4605 | .4615 |
| 464 | .4559 | .4569 | .4579 | .4586 | .4596 | .4606 | .4616 | .4626 |
| 465 | .4571 | .4581 | .4590 | .4597 | .4607 | .4617 | .4626 | .4636 |
| 466 | .4584 | .4593 | .4602 | .4609 | .4618 | .4628 | .4637 | .4646 |
| 467 | .4596 | .4605 | .4614 | .4620 | .4629 | .4639 | .4648 | .4657 |
| 468 | .4608 | .4617 | .4626 | .4632 | .4641 | .4650 | .4659 | .4667 |
| 469 | .4621 | .4629 | .4637 | .4643 | .4652 | .4661 | .4669 | .4678 |
| 470 | .4633 | .4641 | .4649 | .4655 | .4663 | .4672 | .4680 | .4688 |
| 471 | .4645 | .4653 | .4661 | .4666 | .4674 | .4683 | .4691 | .4698 |
| 472 | .4657 | .4665 | .4672 | .4678 | .4685 | .4694 | .4701 | .4709 |
| 473 | .4670 | .4677 | .4684 | .4689 | .4697 | .4705 | .4712 | .4719 |
| 474 | .4682 | .4689 | .4696 | .4701 | .4708 | .4716 | .4722 | .4730 |
| 475 | .4694 | .4700 | .4707 | .4712 | .4719 | .4726 | .4733 | .4740 |
| 476 | .4706 | .4712 | .4719 | .4724 | .4730 | .4737 | .4744 | .4750 |
| 477 | .4718 | .4724 | .4731 | .4735 | .4741 | .4748 | .4754 | .4761 |
| 478 | .4731 | .4736 | .4743 | .4747 | .4753 | .4759 | .4765 | .4771 |
| 479 | .4743 | .4748 | .4754 | .4758 | .4764 | .4770 | .4775 | .4782 |
| 480 | .4755 | .4760 | .4766 | .4770 | .4775 | .4781 | .4786 | .4792 |

Spheroids ſtanding.

| Height of the Seg-ment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
|---|---|---|---|---|---|---|---|---|
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | ,85<br>,86<br>,87<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 481 | .4767 | .4772 | .4778 | .4781 | .4786 | .4792 | .4797 | .4802 |
| 482 | .4780 | .4784 | .4789 | .4793 | .4798 | .4803 | .4807 | .4813 |
| 483 | .4792 | .4796 | .4801 | .4804 | .4809 | .4814 | .4818 | .4823 |
| 484 | .4804 | .4808 | .4813 | .4816 | .4820 | .4825 | .4829 | .4834 |
| 485 | .4816 | .4820 | .4824 | .4827 | .4831 | .4836 | .4839 | .4844 |
| 486 | .4829 | .4832 | .4836 | .4839 | .4843 | .4847 | .4850 | .4854 |
| 487 | .4841 | .4844 | .4848 | .4850 | .4854 | .4858 | .4861 | .4865 |
| 488 | .4853 | .4856 | .4860 | .4862 | .4865 | .4869 | .4872 | .4875 |
| 489 | .4866 | .4868 | .4871 | .4873 | .4877 | .4880 | .4882 | .4886 |
| 490 | .4878 | .4880 | .4883 | .4885 | .4888 | .4891 | .4893 | .4896 |
| 491 | .4890 | .4892 | .4895 | .4896 | .4899 | .4902 | .4904 | .4906 |
| 492 | .4902 | .4904 | .4906 | .4908 | .4910 | .4913 | .4914 | .4917 |
| 493 | .4915 | .4916 | .4918 | .4919 | ,4922 | .4924 | .4925 | .4927 |
| 494 | .4927 | .4928 | .4930 | .4931 | .4933 | .4935 | .4936 | .4938 |
| 495 | .4939 | .4940 | .4941 | ,4942 | .4944 | .4945 | .4946 | .4948 |
| 496 | .4951 | .4952 | .4953 | .4954 | .4955 | .4956 | .4957 | .4958 |
| 497 | .4963 | .4964 | .4965 | .4965 | .4966 | .4967 | .4968 | .4969 |
| 498 | .4976 | .4976 | .4977 | .4977 | .4978 | .4978 | .4979 | .4979 |
| 499 | .4988 | .4988 | .4988 | .4988 | .4989 | .4989 | .4989 | .4990 |
| 500 | .5000 | .5000 | .5000 | .5000 | .5000 | .5000 | .5000 | .5000 |
| 501 | .5012 | .5012 | .5012 | .5012 | .5011 | .5011 | .5011 | .5010 |
| 502 | .5024 | .5024 | .5023 | .5023 | .5022 | .5022 | ,5021 | .5021 |
| 503 | .5037 | .5036 | .5035 | .5035 | .5034 | .5033 | .5032 | .5031 |
| 504 | .5049 | .5048 | .5047 | .5046 | .5045 | .5044 | .5043 | .5042 |
| 505 | .5061 | .5060 | .5059 | .5058 | .5056 | .5055 | .5054 | .5052 |
| 506 | .5073 | .5072 | .5070 | .5069 | .5067 | .5065 | .5064 | .5062 |
| 507 | .5085 | .5084 | .5082 | .5081 | .5078 | .5076 | .5075 | .5073 |
| 508 | .5098 | .5096 | .5094 | .5092 | .5090 | .5087 | .5086 | .5083 |
| 509 | .5110 | .5108 | .5105 | .5104 | .5101 | .5098 | .5096 | ,5094 |
| 510 | .5122 | .5120 | .5117 | ,5115 | .5112 | .5109 | .5107 | .5104 |

| Spheroids ſtanding. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Height of the Seg-ment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | ,85<br>,86<br>,87<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 511 | .5134 | .5132 | .5129 | .5127 | .5123 | .5120 | .5118 | .5114 |
| 512 | .5147 | .5144 | .5140 | .5138 | .5135 | .5131 | .5128 | .5125 |
| 513 | .5159 | .5156 | .5152 | .5150 | .5146 | .5142 | .5139 | .5135 |
| 514 | .5171 | .5168 | .5164 | .5161 | .5157 | .5153 | .5150 | .5146 |
| 515 | .5184 | .5180 | .5176 | .5173 | .5169 | .5164 | .5161 | .5156 |
| 516 | .5196 | .5192 | .5187 | .5184 | .5180 | .5175 | .5171 | .5166 |
| 517 | .5208 | .5204 | .5199 | .5196 | .5191 | .5186 | .5182 | .5177 |
| 518 | .5220 | .5216 | .5211 | .5207 | .5202 | .5197 | .5193 | .5187 |
| 519 | .5233 | .5228 | .5222 | .5219 | .5214 | .5208 | .5203 | .5198 |
| 520 | .5245 | .5240 | .5234 | .5230 | .5225 | .5219 | .5214 | .5208 |
| 521 | .5257 | .5252 | .5246 | .5242 | .5236 | .5230 | .5225 | .5218 |
| 522 | .5269 | .5264 | .5257 | .5253 | .5247 | .5241 | .5235 | .5229 |
| 523 | .5282 | .5276 | .5269 | .5265 | .5259 | .5252 | .5246 | .5239 |
| 524 | .5294 | .5288 | .5281 | .5276 | .5270 | .5263 | .5256 | .5250 |
| 525 | .5306 | .5300 | .5293 | .5288 | .5281 | .5274 | .5267 | .5260 |
| 526 | .5318 | .5311 | .5304 | .5299 | .5292 | .5284 | .5278 | .5270 |
| 527 | .5330 | .5323 | .5316 | .5311 | .5303 | .5295 | .5288 | .5281 |
| 528 | .5343 | .5335 | .5328 | .5322 | .5315 | .5306 | .5299 | .5291 |
| 529 | .5355 | .5347 | .5339 | .5334 | .5326 | .5317 | .5309 | .5302 |
| 530 | .5367 | .5359 | .5351 | .5345 | .5337 | .5328 | .5320 | .5312 |
| 531 | .5379 | .5371 | .5363 | .5357 | .5348 | .5339 | .5331 | .5322 |
| 532 | .5392 | .5383 | .5374 | .5368 | .5359 | .5350 | .5341 | .5333 |
| 533 | .5404 | .5395 | .5386 | .5380 | .5371 | .5361 | .5352 | .5343 |
| 534 | .5416 | .5407 | .5398 | .5391 | .5382 | .5372 | .5363 | .5354 |
| 535 | .5429 | .5419 | .5410 | .5403 | .5393 | .5383 | .5374 | .5364 |
| 536 | .5441 | .5431 | .5421 | .5414 | .5404 | .5394 | .5384 | .5374 |
| 537 | .5453 | .5443 | .5433 | .5426 | .5415 | .5405 | .5395 | .5385 |
| 538 | .5465 | .5455 | .5445 | .5437 | .5427 | .5416 | .5406 | .5395 |
| 539 | .5478 | .5467 | .5456 | .5449 | .5438 | .5427 | .5416 | .5406 |
| 540 | .5490 | .5479 | .5468 | .5460 | .5449 | .5438 | .5427 | .5416 |

Spheroids ſtanding.

| Height of the Seg-ment. | 1 Var.<br>,67<br>,68<br>,69 | 2 Var.<br>,70<br>,71<br>,72<br>,73 | 3 Var.<br>,74<br>,75<br>,76 | 4 Var.<br>,77<br>,78<br>,79<br>,80 | 5 Var.<br>,81<br>,82<br>,83<br>,84 | 6 Var.<br>,85<br>,86<br>,87<br>,88 | 7 Var.<br>,89<br>,90<br>,91<br>,92 | 8 Var.<br>,93<br>,94<br>,95 |
|---|---|---|---|---|---|---|---|---|
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 541 | .5502 | .5491 | .5480 | .5472 | .5460 | .5449 | .5438 | .5426 |
| 542 | .5514 | .5503 | .5491 | .5483 | .5471 | .5460 | .5448 | .5437 |
| 543 | .5527 | .5515 | .5503 | .5495 | .5483 | .5471 | .5459 | .5447 |
| 544 | .5539 | .5527 | .5515 | .5506 | .5494 | .5482 | .5470 | .5458 |
| 545 | .5551 | .5539 | .5527 | .5518 | .5505 | .5493 | .5481 | .5468 |
| 546 | .5563 | .5551 | .5538 | .5529 | .5516 | .5503 | .5491 | .5478 |
| 547 | .5575 | .5563 | .5550 | .5541 | .5527 | .5514 | .5502 | .5489 |
| 548 | .5588 | .5575 | .5562 | .5552 | .5539 | .5525 | .5513 | .5499 |
| 549 | .5600 | .5587 | .5573 | .5564 | 5550 | .5536 | .5523 | .5510 |
| 550 | .5612 | .5599 | .5585 | .5575 | .5561 | .5547 | .5534 | .5520 |
| 551 | .5624 | .5611 | .5597 | .5586 | .5572 | .5558 | .5545 | .5530 |
| 552 | .5636 | .5623 | .5608 | .5598 | .5583 | .5569 | .5555 | .5541 |
| 553 | .5648 | .5634 | .5620 | .5609 | .5594 | .5580 | .5566 | .5551 |
| 554 | .5660 | .5646 | .5631 | .5621 | .5605 | .5591 | .5576 | .5562 |
| 555 | .5673 | .5658 | .5643 | .5632 | .5617 | .5602 | .5587 | .5572 |
| 556 | .5685 | .5670 | .5655 | .5643 | .5628 | .5612 | .5598 | .5582 |
| 557 | .5697 | .5682 | .5666 | .5655 | .5639 | .5623 | .5608 | .5593 |
| 558 | .5709 | .5693 | .5678 | .5666 | .5650 | .5634 | .5619 | .5603 |
| 559 | .5721 | .5705 | .5689 | .5678 | .5661 | .5645 | .5629 | .5614 |
| 560 | .5733 | .5717 | .5701 | .5689 | .5672 | .5656 | .5640 | .5624 |
| 561 | .5745 | .5729 | .5713 | .5701 | .5683 | .5667 | .5651 | .5634 |
| 562 | .5757 | .5741 | .5724 | .5712 | .5695 | .5678 | .5661 | .5645 |
| 563 | .5770 | .5753 | .5736 | .5724 | .5706 | .5689 | .5672 | .5655 |
| 564 | .5782 | .5765 | .5747 | .5735 | .5717 | .5700 | .5683 | .5666 |
| 565 | .5794 | 5777 | .5759 | .5747 | .5729 | .5711 | .5694 | .5676 |
| 566 | .5806 | .5789 | .5771 | .5758 | .5740 | .5722 | .5704 | .5686 |
| 567 | .5818 | .5801 | 5782 | .5770 | .5751 | .5733 | .5715 | .5697 |
| 568 | .5831 | .5813 | .5794 | .5781 | .5762 | .5744 | .5726 | .5707 |
| 569 | .5843 | .5825 | .5805 | .5793 | .5774 | .5755 | .5736 | .5718 |
| 570 | .5855 | .5837 | .5817 | .5804 | .5785 | .5766 | .5747 | .5728 |

Spheroids ſtanding.

| Height of the Seg-ment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var |
|---|---|---|---|---|---|---|---|---|
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | ,85<br>,86<br>,87<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 571 | .5867 | .5849 | .5829 | .5815 | .5796 | .5777 | .5758 | .5738 |
| 572 | .5879 | .5860 | .5840 | .5827 | .5807 | .5788 | .5768 | .5749 |
| 573 | .5891 | .5872 | .5852 | .5838 | .5818 | .5798 | .5779 | .5759 |
| 574 | .5903 | .5884 | .5863 | .5849 | .5829 | .5809 | .5789 | .5770 |
| 575 | .5915 | .5896 | .5875 | .5861 | .5841 | .5820 | .5800 | .5780 |
| 576 | .5927 | .5907 | .5887 | .5872 | .5852 | .5831 | .5811 | .5790 |
| 577 | .5939 | .5919 | .5898 | .5883 | .5863 | .5842 | .5821 | .5801 |
| 578 | .5951 | .5931 | .5910 | .5894 | .5874 | .5852 | .5832 | .5811 |
| 579 | .5963 | .5942 | .5921 | .5906 | .5885 | .5863 | .5842 | .5822 |
| 580 | .5975 | .5954 | .5933 | .5917 | .5896 | .5874 | .5853 | .5832 |
| 581 | .5987 | .5966 | .5945 | .5928 | .5907 | .5885 | .5864 | .5842 |
| 582 | .5999 | .5978 | .5956 | .5940 | .5918 | .5896 | .5874 | .5853 |
| 583 | .6011 | .5989 | .5968 | .5951 | .5929 | .5907 | .5885 | .5863 |
| 584 | .6023 | .6001 | .5979 | .5963 | .5940 | .5918 | .5895 | .5873 |
| 585 | .6035 | .6013 | .5991 | .5974 | .5952 | .5929 | .5906 | .5884 |
| 586 | .6048 | .6025 | .6003 | .5985 | .5963 | .5939 | .5917 | .5894 |
| 587 | .6060 | .6037 | .6014 | .5997 | .5974 | .5950 | .5927 | .5904 |
| 588 | .6072 | .6048 | .6026 | .6008 | .5985 | .5961 | .5938 | .5914 |
| 589 | .6084 | .6060 | .6037 | .6020 | .5996 | .5972 | .5948 | 5925 |
| 590 | .6096 | .6072 | .6049 | .6031 | .6007 | .5983 | .5959 | .5935 |
| 591 | .6108 | .6084 | .6061 | .6042 | .6018 | .5994 | .5970 | .5945 |
| 592 | .6120 | .6096 | .6072 | .6054 | .6029 | .6005 | .5980 | .5956 |
| 593 | .6132 | .6107 | .6084 | .6065 | .6040 | .6015 | 5991 | .5966 |
| 594 | .6144 | .6119 | .6095 | .6076 | .6051 | .6026 | .6001 | .5977 |
| 595 | .6156 | .6131 | .6107 | .6088 | .6063 | .6037 | .6012 | .5987 |
| 596 | .6168 | .6143 | .6118 | .6099 | .6074 | .6048 | .6023 | .5997 |
| 597 | .6180 | .6155 | .6130 | .6110 | .6085 | .6059 | .6033 | .6008 |
| 598 | .6192 | .6166 | .6141 | .6121 | .6096 | .6069 | .6044 | .6018 |
| 599 | .6204 | .6178 | .6153 | .6133 | .6107 | .6080 | .6054 | .6029 |
| 600 | .6216 | .6190 | .6164 | .6144 | .6118 | .6091 | .6065 | .6039 |

Spheroids ſtanding.

| Height of the Segment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
|---|---|---|---|---|---|---|---|---|
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | ,85<br>,86<br>,87<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 601 | .6228 | .6202 | .6176 | .6155 | .6129 | .6102 | .6076 | .6049 |
| 602 | .6240 | .6214 | .6187 | .6167 | .6140 | .6113 | .6086 | .6060 |
| 603 | .6252 | .6225 | .6199 | .6178 | .6151 | .6124 | .6097 | .6070 |
| 604 | .6264 | .6237 | .6210 | .6190 | .6162 | .6135 | .6107 | .6080 |
| 605 | .6276 | .6249 | .6222 | .6201 | .6174 | .6146 | .6118 | .6091 |
| 606 | .6288 | .6261 | .6233 | .6212 | .6185 | .6156 | .6129 | .6101 |
| 607 | .6300 | .6273 | .6245 | .6224 | .6196 | .6167 | .6139 | .6111 |
| 608 | .6312 | .6284 | .6256 | .6235 | .6207 | .6178 | .6150 | .6121 |
| 609 | .6324 | .6296 | .6268 | .6247 | .6218 | .6189 | .6160 | .6132 |
| 610 | .6336 | .6308 | .6279 | .6258 | .6229 | .6200 | .6171 | .6142 |
| 611 | .6348 | .6320 | .6290 | .6269 | .6240 | .6211 | .6182 | .6152 |
| 612 | .6360 | .6331 | .6302 | .6280 | .6251 | .6221 | .6192 | .6163 |
| 613 | .6371 | .6343 | .6313 | .6292 | .6262 | .6232 | .6203 | .6173 |
| 614 | .6383 | .6354 | .6325 | .6303 | .6273 | .6243 | .6213 | .6184 |
| 615 | .6395 | .6366 | .6336 | .6314 | .6284 | .6254 | .6223 | .6194 |
| 616 | .6407 | .6378 | .6347 | .6325 | .6295 | .6265 | .6234 | .6204 |
| 617 | .6419 | .6389 | .6359 | .6336 | .6306 | .6275 | .6245 | .6215 |
| 618 | .6430 | .6401 | .6370 | .6348 | .6317 | .6286 | .6255 | .6225 |
| 619 | .6442 | .6412 | .6382 | .6359 | .6328 | .6296 | .6266 | .6236 |
| 620 | .6454 | .6424 | .6393 | .6370 | .6339 | .6307 | .6276 | .6246 |
| 621 | .6466 | .6436 | .6404 | .6381 | .6350 | .6318 | .6287 | .6256 |
| 622 | .6478 | .6447 | .6416 | .6392 | .6361 | .6329 | .6297 | .6267 |
| 623 | .6489 | .6459 | .6427 | .6404 | .6372 | .6339 | .6308 | .6277 |
| 624 | .6501 | .6470 | .6439 | .6415 | .6383 | .6350 | .6318 | .6287 |
| 625 | .6513 | .6482 | .6450 | .6426 | .6394 | .6361 | .6329 | .6298 |
| 626 | .6525 | .6494 | .6461 | .6437 | .6404 | .6372 | .6340 | .6308 |
| 627 | .6537 | .6505 | .6473 | .6448 | .6415 | .6383 | .6350 | .6318 |
| 628 | .6548 | .6517 | .6484 | .6460 | .6426 | .6393 | .6361 | .6328 |
| 629 | .6560 | .6528 | .6496 | .6471 | .6437 | .6404 | .6371 | .6339 |
| 630 | .6572 | .6540 | .6507 | .6482 | .6448 | .6415 | .6382 | .6349 |

## Spheroids ſtanding.

| Height of the Segment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
|---|---|---|---|---|---|---|---|---|
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | ,85<br>,86<br>,87<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 631 | .6584 | .6552 | .6518 | .6493 | .6459 | .6426 | .6393 | .6359 |
| 632 | .6596 | .6563 | .6530 | .6504 | .6470 | .6437 | .6403 | .6370 |
| 633 | .6607 | .6575 | .6541 | .6516 | .6481 | .6447 | .6414 | .6380 |
| 634 | .6619 | .6586 | .6552 | .6527 | .6492 | .6458 | .6424 | .6390 |
| 635 | .6631 | .6598 | .6564 | .6538 | .6503 | .6469 | .6434 | .6401 |
| 636 | .6643 | .6609 | .6575 | .6549 | .6514 | .6480 | .6445 | .6411 |
| 637 | .6655 | .6621 | .6586 | .6560 | .6525 | .6491 | .6456 | .6421 |
| 638 | .6666 | .6632 | .6597 | .6572 | .6536 | .6501 | .6466 | .6431 |
| 639 | .6678 | .6644 | .6609 | .6583 | .6547 | .6512 | .6477 | .6442 |
| 640 | .6690 | .6655 | .6620 | .6594 | .6558 | .6523 | .6487 | .6452 |
| 641 | .6702 | .6667 | .6631 | .6605 | .6569 | .6534 | .6498 | .6402 |
| 642 | .6714 | .6678 | .6643 | .6616 | .6580 | .6544 | .6508 | .6473 |
| 643 | .6725 | .6690 | .6654 | .6628 | .6591 | .6555 | .6519 | .6483 |
| 644 | .6737 | .6701 | .6665 | .6639 | .6602 | .6566 | .6529 | .6493 |
| 645 | .6749 | .6713 | .6677 | .6650 | .6613 | .6577 | .6540 | .6504 |
| 646 | .6761 | .6725 | .6688 | .6661 | .6624 | .6587 | .6551 | .6514 |
| 647 | .6773 | .6736 | .6699 | .6672 | .6635 | .6598 | .6561 | .6524 |
| 648 | .6784 | .6748 | .6710 | .6684 | .6646 | .6609 | .6572 | .6534 |
| 649 | .6796 | .6759 | .6722 | .6695 | .6657 | .6619 | .6582 | .6545 |
| 650 | .6808 | .6771 | .6733 | .6706 | .6668 | .6630 | .6593 | .6555 |
| 651 | .6820 | .6782 | .6744 | .6717 | .6679 | .6641 | .6603 | .6565 |
| 652 | .6831 | .6794 | .6756 | .6728 | .6690 | .6651 | .6614 | .6576 |
| 653 | .6843 | .6805 | .6767 | .6739 | .6701 | .6662 | .6624 | .6586 |
| 654 | .6854 | .6817 | .6778 | .6750 | .6712 | .6673 | .6635 | .6596 |
| 655 | .6866 | .6828 | .6790 | .6761 | .6723 | .6684 | .6645 | .6607 |
| 656 | .6878 | .6839 | .6801 | .6772 | .6733 | .6694 | .6655 | .6617 |
| 657 | .6889 | .6851 | .6812 | .6783 | .6744 | .6705 | .6666 | .6627 |
| 658 | .6901 | .6862 | .6823 | .6794 | .6755 | .6716 | .6676 | .6637 |
| 659 | .6912 | .6874 | .6835 | .6805 | .6766 | .6726 | .6687 | .6648 |
| 660 | .6924 | .6885 | .6846 | .6816 | .6777 | .6737 | .6697 | .6658 |

| Spheroids ſtanding. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Height of the Segment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | ,85<br>,86<br>,87<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 661 | .6935 | .6896 | .6857 | .6827 | .6788 | .6748 | .6707 | .6668 |
| 662 | .6947 | .6907 | .6868 | .6838 | .6798 | .6758 | .6718 | .6679 |
| 663 | .6958 | .6919 | .6879 | .6849 | .6809 | .6769 | .6728 | .6689 |
| 664 | .6969 | .6930 | .6890 | .6860 | .6820 | .6779 | .6739 | .6699 |
| 665 | .6981 | .6941 | .6902 | .6871 | .6831 | .6789 | .6749 | .6710 |
| 666 | .6992 | .6952 | .6913 | .6881 | .6841 | .6800 | .6759 | .6720 |
| 667 | .7003 | .6963 | .6924 | .6892 | .6852 | .6811 | .6770 | .6730 |
| 668 | .7014 | .6975 | .6935 | .6903 | .6863 | .6821 | .6780 | .6740 |
| 669 | .7026 | .6986 | .6946 | .6914 | .6873 | .6832 | .6791 | .6751 |
| 670 | .7037 | .6997 | .6957 | .6925 | .6884 | .6842 | .6801 | .6761 |
| 671 | .7049 | .7008 | .6968 | .6936 | .6895 | .6853 | .6812 | .6771 |
| 672 | .7060 | .7020 | .6979 | .6947 | .6906 | .6863 | .6822 | .6781 |
| 673 | .7072 | .7031 | .6990 | .6958 | .6916 | .6874 | .6833 | .6792 |
| 674 | .7083 | .7043 | .7001 | .6969 | .6927 | .6885 | .6843 | .6802 |
| 675 | .7095 | .7054 | .7013 | .6981 | .6938 | .6896 | .6853 | .6812 |
| 676 | .7107 | .7065 | .7024 | .6992 | .6949 | .6906 | .6864 | .6822 |
| 677 | .7118 | .7077 | .7035 | .7003 | .6960 | .6917 | .6875 | .6832 |
| 678 | .7130 | .7088 | .7046 | .7014 | .6970 | .6928 | .6885 | .6843 |
| 679 | .7141 | .7100 | .7057 | .7025 | .6981 | .6938 | .6896 | .6853 |
| 680 | .7153 | .7111 | .7068 | .7036 | .6992 | .6949 | .6906 | .686 |
| 681 | .7164 | .7122 | .7079 | .7047 | .7003 | .6960 | .6916 | .6873 |
| 682 | .7176 | .7133 | .7090 | .7058 | .7014 | .6970 | .6927 | 6884 |
| 683 | .7187 | .7145 | .7101 | .7069 | .7024 | .6981 | .6937 | .6894 |
| 684 | .7199 | .7156 | .7112 | .7080 | .7035 | .6991 | .6948 | .6904 |
| 685 | .7210 | .7167 | .7123 | .7091 | .7046 | .7002 | .6958 | .6915 |
| 686 | .7221 | .7178 | .7134 | .7101 | .7057 | .7013 | .6968 | .6925 |
| 687 | .7233 | .7189 | .7145 | .7112 | .7068 | .7023 | .6979 | .6935 |
| 688 | .7245 | .7201 | .7156 | .7123 | .7078 | .7034 | .6989 | .6945 |
| 689 | .7256 | .7212 | .7167 | .7134 | .7089 | .7044 | .7000 | .6956 |
| 690 | .7267 | .7223 | .7178 | .7145 | .7100 | .7055 | .7010 | .6966 |

Spheroids ſtanding.

| Height of the Seg-ment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
|---|---|---|---|---|---|---|---|---|
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | ,85<br>,86<br>,87<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95<br>,96 |
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 691 | .7278 | .7234 | .7189 | .7156 | .7111 | .7066 | .7020 | .6976 |
| 692 | .7289 | .7245 | .7200 | .7166 | .7121 | .7076 | .7031 | .6986 |
| 693 | .7300 | .7256 | .7211 | .7177 | .7132 | .7087 | .7041 | .6997 |
| 694 | .7311 | .7267 | .7222 | .7188 | .7142 | .7097 | .7052 | .7007 |
| 695 | .7323 | .7278 | .7233 | .7199 | .7153 | .7107 | .7062 | .7017 |
| 696 | .7334 | .7229 | .7243 | .7209 | .7164 | .7118 | .7072 | .7027 |
| 697 | .7345 | .7300 | .7254 | .7220 | .7174 | .7129 | .7083 | .7037 |
| 698 | .7356 | .7311 | .7265 | .7231 | .7185 | .7139 | .7093 | .7048 |
| 699 | .7367 | .7322 | .7276 | .7241 | .7195 | .7150 | .7104 | .7058 |
| 700 | .7378 | .7333 | .7287 | .7252 | .7206 | .7160 | .7114 | .7068 |
| 701 | .7389 | .7344 | .7298 | .7263 | .7217 | .7170 | .7124 | .7078 |
| 702 | .7400 | .7355 | .7309 | .7274 | .7227 | .7181 | .7135 | .7088 |
| 703 | .7411 | .7366 | .7319 | .7284 | .7238 | .7191 | .7145 | .7099 |
| 704 | .7422 | .7377 | .7331 | .7295 | .7248 | .7202 | .7155 | .7109 |
| 705 | .7434 | .7388 | .7341 | .7306 | .7259 | .7212 | .7166 | .7119 |
| 706 | .7445 | .7399 | .7352 | .7317 | .7270 | .7222 | .7176 | .7129 |
| 707 | .7456 | .7410 | .7363 | .7328 | .7280 | .7233 | .7186 | .7139 |
| 708 | .7467 | .7421 | .7373 | .7338 | .7291 | .7243 | .7196 | .7150 |
| 709 | .7478 | .7432 | .7384 | .7349 | .7301 | .7254 | .7207 | .7160 |
| 710 | .7489 | .7443 | .7395 | .7360 | .7312 | .7264 | .7217 | .7170 |
| 711 | .7500 | .7454 | .7406 | .7371 | .7323 | .7274 | .7227 | .7180 |
| 712 | .7511 | .7464 | .7417 | .7381 | .7333 | .7285 | .7238 | .7190 |
| 713 | .7522 | .7475 | .7427 | .7392 | .7344 | .7295 | .7248 | .7201 |
| 714 | .7533 | .7486 | .7438 | .7402 | .7354 | .7306 | .7258 | .7211 |
| 715 | .7544 | .7497 | .7449 | .7413 | .7364 | .7316 | .7269 | .7221 |
| 716 | .7554 | .7507 | .7460 | .7424 | .7375 | .7326 | .7279 | .7231 |
| 717 | .7565 | .7518 | .7471 | .7434 | .7386 | .7337 | .7289 | .7241 |
| 718 | .7576 | .7529 | .7481 | .7445 | .7396 | .7347 | .7299 | .7252 |
| 719 | .7587 | .7539 | .7492 | .7455 | .7407 | .7358 | .7310 | .7262 |
| 720 | .7598 | .7550 | .7503 | .7466 | .7417 | .7368 | .7320 | .7272 |

### Spheroids ſtanding.

| Height of the Segment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
|---|---|---|---|---|---|---|---|---|
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | ,85<br>,86<br>,87<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 721 | ·7609 | ·7561 | ·7514 | ·7477 | ·7428 | ·7378 | ·7330 | ·7282 |
| 722 | ·7620 | ·7572 | ·7524 | ·7487 | ·7438 | ·7389 | ·7340 | ·7292 |
| 723 | ·7631 | ·7582 | ·7535 | ·7498 | ·7449 | ·7399 | ·7351 | ·7302 |
| 724 | ·7642 | ·7593 | ·7545 | ·7508 | ·7459 | ·7410 | ·7361 | ·7312 |
| 725 | ·7653 | ·7604 | ·7556 | ·7519 | ·7469 | ·7420 | ·7371 | ·7323 |
| 726 | ·7663 | ·7615 | ·7567 | ·7530 | ·7480 | ·7430 | ·7381 | ·7333 |
| 727 | ·7671 | ·7626 | ·7577 | ·7540 | ·7491 | ·7441 | ·7391 | ·7343 |
| 728 | ·7685 | ·7636 | ·7588 | ·7551 | ·7501 | ·7451 | ·7402 | ·7353 |
| 729 | ·7696 | ·7647 | ·7598 | ·7561 | ·7512 | ·7462 | ·7412 | ·7363 |
| 730 | ·7707 | ·7658 | ·7609 | ·7572 | ·7522 | ·7472 | ·7422 | ·7373 |
| 731 | ·7718 | ·7669 | ·7620 | ·7583 | ·7533 | ·7482 | ·7432 | ·7383 |
| 732 | ·7729 | ·7680 | ·7630 | ·7593 | ·7543 | ·7493 | ·7443 | ·7393 |
| 733 | ·7740 | ·7690 | ·7641 | ·7604 | ·7554 | ·7503 | ·7453 | ·7404 |
| 734 | ·7751 | ·7701 | ·7652 | ·7614 | ·7564 | ·7514 | ·7463 | ·7414 |
| 735 | ·7762 | ·7712 | ·7663 | ·7625 | ·7574 | ·7524 | ·7474 | ·7424 |
| 736 | ·7772 | ·7723 | ·7673 | ·7636 | ·7585 | ·7534 | ·7484 | ·7434 |
| 737 | ·7783 | ·7734 | ·7684 | ·7646 | ·7596 | ·7545 | ·7494 | ·7444 |
| 738 | ·7794 | ·7744 | ·7695 | ·7657 | ·7606 | ·7555 | ·7504 | ·7455 |
| 739 | ·7805 | ·7755 | ·7705 | ·7667 | ·7617 | ·7566 | ·7515 | ·7465 |
| 740 | ·7816 | ·7766 | ·7716 | ·7678 | ·7627 | ·7576 | ·7525 | ·7475 |
| 741 | ·7827 | ·7777 | ·7726 | ·7688 | ·7637 | ·7586 | ·7535 | ·7485 |
| 742 | ·7837 | ·7787 | ·7737 | ·7699 | ·7648 | ·7597 | ·7545 | ·7495 |
| 743 | ·7848 | ·7798 | ·7747 | ·7709 | ·7658 | ·7607 | ·7556 | ·7505 |
| 744 | ·7859 | ·7808 | ·7758 | ·7720 | ·7668 | ·7617 | ·7566 | ·7515 |
| 745 | ·7870 | ·7819 | ·7768 | ·7730 | ·7679 | ·7628 | ·7576 | ·7526 |
| 746 | ·7880 | ·7830 | ·7779 | ·7740 | ·7689 | ·7638 | ·7586 | ·7536 |
| 747 | ·7891 | ·7840 | ·7789 | ·7751 | ·7699 | ·7648 | ·7596 | ·7546 |
| 748 | ·7902 | ·7851 | ·7799 | ·7761 | ·7709 | ·7658 | ·7607 | ·7556 |
| 749 | ·7912 | ·7861 | ·7810 | ·7772 | ·7720 | ·7669 | ·7617 | ·7566 |
| 750 | ·7923 | ·7872 | ·7820 | ·7782 | ·7730 | ·7679 | ·7627 | ·7576 |

Spheroids ſtanding.

| Height of the Seg-ment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var | 8 Var |
|---|---|---|---|---|---|---|---|---|
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | ,85<br>,86<br>,87<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
| | Seg. | Seg. | Seg. | Seg. | Seg | Seg. | Seg. | Seg. |
| 751 | .7933 | .7882 | .7830 | .7792 | .7740 | .7689 | .7637 | .7586 |
| 752 | .7944 | .7893 | .7841 | .7803 | .7751 | .7699 | .7647 | .7596 |
| 753 | .7954 | .7903 | .7851 | .7813 | .7761 | .7709 | .7657 | .7606 |
| 754 | .7965 | .7914 | .7862 | .7823 | .7771 | .7719 | .7667 | .7616 |
| 755 | .7975 | .7924 | .7872 | .7834 | .7782 | .7730 | .7678 | .7627 |
| 756 | .7986 | .7934 | .7882 | .7844 | .7792 | .7740 | .7688 | .7637 |
| 757 | .7996 | .7945 | .7893 | .7854 | .7802 | .7750 | .7698 | .7647 |
| 758 | .8006 | .7955 | .7903 | .7864 | .7812 | .7760 | .7708 | .7657 |
| 759 | .8017 | .7966 | .7914 | 7875 | .7823 | .7770 | .7718 | .7667 |
| 760 | .8027 | .7976 | .7924 | .7885 | .7833 | .7780 | .7728 | .7677 |
| 761 | .8037 | .7986 | 7934 | .7895 | .7843 | .7790 | .7738 | .7687 |
| 762 | .8048 | .7996 | .7945 | .7905 | .7853 | .7800 | .7748 | .7697 |
| 763 | .8058 | .8007 | .7955 | .7916 | .7863 | .7810 | .7758 | .7707 |
| 764 | .8068 | .8017 | .7965 | .7926 | .7873 | .7820 | .7768 | .7717 |
| 765 | .8078 | .8027 | .7976 | .7936 | .7884 | .7831 | .7779 | .7727 |
| 766 | .8089 | .8037 | .7986 | .7946 | .7894 | .7841 | .7789 | .7737 |
| 767 | .8099 | 8047 | .7996 | .7956 | .7904 | .7851 | .7799 | .7747 |
| 768 | .8109 | .8058 | .8006 | .7967 | .7914 | .7861 | .7809 | .7757 |
| 769 | .8120 | .8068 | .8017 | .7977 | .7924 | .7871 | .7819 | .7767 |
| 770 | .8130 | .8078 | .8027 | .7987 | 7934 | .7881 | .7829 | .7777 |
| 771 | .8140 | .8088 | .8037 | .7997 | .7944 | .7891 | .7839 | .7787 |
| 772 | .8150 | .8098 | .8047 | .8007 | .7954 | .7901 | .7849 | .7797 |
| 773 | .8161 | .8109 | 8057 | .8017 | .7964 | .7911 | .7859 | .7807 |
| 774 | .8171 | .8119 | 8067 | .8027 | .7974 | .7921 | .7869 | .7817 |
| 775 | .8181 | .8129 | .8078 | .8038 | .7985 | .7932 | .7880 | .7828 |
| 776 | .8191 | .8139 | .8088 | .8048 | .7995 | .7942 | .7890 | .7838 |
| 777 | 8201 | .8149 | .8098 | .8058 | .8005 | .7952 | .7900 | .7848 |
| 778 | .8212 | .8160 | .8108 | .8068 | .8015 | .7962 | .7910 | .7858 |
| 779 | .8222 | .8170 | 8118 | .8078 | .8025 | .7972 | .7920 | .7868 |
| 780 | .8232 | .8180 | .8128 | .8088 | .8035 | .7982 | .7930 | .7878 |

Spheroids ſtanding.

| Height of the Segment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
|---|---|---|---|---|---|---|---|---|
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | ,85<br>,86<br>,87<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 781 | .8242 | .8190 | .8138 | .8098 | .8045 | .7992 | .7940 | .7888 |
| 782 | .8252 | .8200 | .8148 | .8108 | .8055 | .8002 | .7950 | .7898 |
| 783 | .8263 | .8211 | .8158 | .8119 | .8066 | .8012 | .7960 | .7908 |
| 784 | .8273 | .8221 | .8168 | .8129 | .8076 | .8022 | .7970 | .7918 |
| 785 | .8283 | .8231 | .8179 | .8139 | .8086 | .8033 | .7980 | .7928 |
| 786 | .8293 | .8241 | .8189 | .8149 | .8096 | .8043 | .7990 | .7938 |
| 787 | .8303 | .8251 | .8199 | .8159 | .8106 | .8053 | .8000 | .7948 |
| 788 | .8314 | .8262 | .8209 | .8170 | .8117 | .8063 | .8010 | .7958 |
| 789 | .8324 | .8272 | .8219 | .8180 | .8127 | .8073 | .8020 | .7968 |
| 790 | .8334 | .8282 | .8229 | .8190 | .8137 | .8083 | .8030 | .7978 |
| 791 | .8344 | .8292 | .8239 | .8200 | .8147 | .8093 | .8040 | .7988 |
| 792 | .8354 | .8302 | .8249 | .8210 | .8157 | .8103 | .8050 | .7998 |
| 793 | .8363 | .8311 | .8259 | .8219 | .8166 | .8113 | .8060 | .8008 |
| 794 | .8373 | .8321 | .8269 | .8229 | .8176 | .8123 | .8070 | .8018 |
| 795 | .8383 | .8331 | .8279 | .8239 | .8186 | .8133 | .8080 | .8028 |
| 796 | .8393 | .8341 | .8288 | .8249 | .8196 | .8142 | .8090 | .8038 |
| 797 | .8403 | .8351 | .8298 | .8259 | .8206 | .8152 | .8100 | .8048 |
| 798 | .8412 | .8360 | .8308 | .8268 | .8215 | .8162 | .8110 | .8058 |
| 799 | .8422 | .8370 | .8318 | .8278 | .8225 | .8172 | .8120 | .8068 |
| 800 | .8432 | .8380 | .8328 | .8288 | .8235 | .8182 | .8130 | .8078 |
| 801 | .8442 | .8390 | .8338 | .8298 | .8245 | .8192 | .8140 | .8088 |
| 802 | .8452 | .8400 | .8348 | .8308 | .8255 | .8202 | .8150 | .8098 |
| 803 | .8461 | .8409 | .8357 | .8318 | .8265 | .8212 | .8160 | .8108 |
| 804 | .8471 | .8419 | .8367 | .8328 | .8275 | .8222 | .8170 | .8118 |
| 805 | .8481 | .8429 | .8377 | .8338 | .8285 | .8232 | .8180 | .8128 |
| 806 | .8491 | .8439 | .8387 | .8347 | .8294 | .8241 | .8189 | .8137 |
| 807 | .8501 | .8449 | .8397 | .8357 | .8304 | .8251 | .8199 | .8147 |
| 808 | .8510 | .8458 | .8406 | .8367 | .8314 | .8261 | .8209 | .8157 |
| 809 | .8520 | .8468 | .8416 | .8377 | .8324 | .8271 | .8219 | .8167 |
| 810 | .8530 | .8478 | .8426 | .8387 | .8334 | .8281 | .8229 | .8177 |

Spheroids ſtanding.

| Height of the Seg-ment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
|---|---|---|---|---|---|---|---|---|
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | ,85<br>,86<br>,87<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 811 | .8539 | .8488 | .8436 | .8397 | .8344 | .8291 | .8239 | .8187 |
| 812 | .8549 | .8497 | .8445 | .8406 | .8354 | .8301 | .8249 | .8197 |
| 813 | .8558 | .8507 | .8455 | .8416 | .8363 | .8311 | .8259 | .8207 |
| 814 | .8568 | .8516 | .8465 | .8426 | .8373 | .8321 | .8269 | .8217 |
| 815 | .8577 | .8526 | .8475 | .8436 | .8383 | .8331 | .8279 | .8227 |
| 816 | .8587 | .8536 | .8484 | .8445 | .8393 | .8340 | .8288 | .8236 |
| 817 | .8596 | .8545 | .8494 | .8455 | .8403 | .8350 | .8298 | .8246 |
| 818 | .8606 | .8555 | .8504 | .8465 | .8412 | .8360 | .8308 | .8256 |
| 819 | .8615 | .8564 | .8513 | .8474 | .8422 | .8370 | .8318 | .8266 |
| 820 | .8625 | .8574 | .8523 | .8484 | .8432 | .8380 | .8328 | .8276 |
| 821 | .8634 | .8583 | .8533 | .8494 | .8442 | .8390 | .8338 | .8286 |
| 822 | .8644 | .8593 | .8542 | .8503 | .8451 | .8399 | .8348 | .8296 |
| 823 | .8653 | .8602 | .8552 | .8513 | .8461 | .8409 | .8357 | .8306 |
| 824 | .8662 | .8612 | .8561 | .8522 | .8470 | .8419 | .8367 | .8316 |
| 825 | .8671 | .8621 | 8571 | .8532 | .8480 | .8429 | .8377 | .8326 |
| 826 | .8681 | .8630 | .8580 | .8541 | .8490 | .8438 | .8387 | .8335 |
| 827 | .8690 | .8640 | .8590 | .8551 | .8499 | .8448 | .8397 | .8345 |
| 828 | .8699 | .8649 | .8599 | .8560 | .8509 | .8458 | .8406 | .8355 |
| 829 | .8709 | .8659 | .8609 | .8570 | .8518 | .8467 | .8416 | .8365 |
| 830 | .8718 | .8668 | .8618 | .8579 | .8528 | .8477 | .8426 | .8375 |
| 831 | .8727 | .8677 | .8627 | .8589 | .8538 | .8487 | .8436 | .8385 |
| 832 | .8737 | .8687 | .8637 | .8598 | .8547 | .8496 | .8446 | .8395 |
| 833 | .8746 | .8696 | .8646 | .8608 | .8557 | .8506 | .8455 | .8405 |
| 834 | .8756 | .8706 | .8656 | .8617 | .8566 | .8516 | .8465 | .8415 |
| 835 | .8765 | .8715 | .8665 | .8627 | .8576 | .8526 | .8475 | .8425 |
| 836 | .8774 | .8724 | .8674 | .8636 | .8586 | .8535 | .8485 | .8434 |
| 837 | .8784 | .8734 | .8684 | .8646 | .8595 | .8545 | .8495 | .8444 |
| 838 | .8793 | .8743 | .8693 | .8656 | .8605 | .8555 | .8504 | .8454 |
| 839 | .8803 | .8753 | .8703 | .8665 | .8614 | .8564 | .8514 | .8464 |
| 840 | .8812 | .8762 | .8712 | .8675 | .8624 | .8574 | .8524 | .8474 |

## Spheroids ſtanding.

| Height of the Seg-ment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
|---|---|---|---|---|---|---|---|---|
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | 85,<br>86,<br>87,<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 841 | .8821 | .8771 | .8721 | .8684 | .8634 | .8584 | .8534 | .8484 |
| 842 | .8830 | .8780 | .8731 | .8694 | .8643 | .8593 | .8543 | .8494 |
| 843 | .8839 | .8790 | .8740 | .8703 | .8653 | .8603 | .8553 | .8503 |
| 844 | .8848 | .8799 | .8749 | .8713 | .8662 | .8712 | .8563 | .8513 |
| 845 | .8857 | .8808 | .8759 | .8722 | .8672 | .8622 | .8573 | .8523 |
| 846 | .8867 | .8817 | .8768 | .8731 | .8681 | .8632 | .8582 | .8533 |
| 847 | .8876 | .8826 | .8777 | .8741 | .8691 | .8641 | .8592 | .8543 |
| 848 | .8885 | .8836 | .8786 | .8750 | .8700 | .8651 | .8602 | .8552 |
| 849 | .8894 | .8845 | .8796 | .8760 | .8710 | .8660 | .8611 | .8562 |
| 850 | .8903 | .8854 | .8805 | .8769 | .8719 | .8670 | .8621 | .8572 |
| 851 | .8912 | .8863 | .8814 | .8778 | .8728 | .8679 | .8631 | .8582 |
| 852 | .8920 | .8872 | .8823 | .8787 | .8738 | .8689 | .8640 | .8592 |
| 853 | .8929 | .8881 | .8832 | .8796 | .8747 | .8698 | .8650 | .8601 |
| 854 | .8937 | .8890 | .8841 | .8805 | .8756 | .8708 | .8659 | .8611 |
| 855 | .8946 | .8899 | .8851 | .8815 | .8766 | .8717 | .8669 | .8621 |
| 856 | .8955 | .8907 | .8860 | .8824 | .8775 | .8726 | .8679 | .8631 |
| 857 | .8963 | .8916 | .8869 | .8833 | .8784 | .8736 | .8688 | .8641 |
| 858 | .8972 | .8925 | .8878 | .8842 | .8793 | .8745 | .8698 | .8650 |
| 859 | .8980 | .8934 | .8887 | .8851 | .8803 | .8755 | .8707 | .8660 |
| 860 | .8989 | .8943 | .8896 | .8860 | .8812 | .8764 | .8717 | .8670 |
| 861 | .8998 | .8952 | .8905 | .8869 | .8821 | .8774 | .8727 | .8680 |
| 862 | .9006 | .8961 | .8914 | .8878 | .8831 | .8783 | .8736 | .8689 |
| 863 | .9015 | .8969 | .8923 | .8887 | .8840 | .8793 | .8746 | .8699 |
| 864 | .9024 | .8978 | .8932 | .8896 | .8849 | .8802 | .8755 | .8709 |
| 865 | .9032 | .8987 | .8941 | .8906 | .8859 | .8812 | .8765 | .8719 |
| 866 | .9041 | .8996 | .8950 | .8915 | .8868 | .8821 | .8775 | .8728 |
| 867 | .9050 | .9005 | .8959 | .8924 | .8877 | .8831 | .8784 | .8738 |
| 868 | .9059 | .9013 | .8968 | .8933 | .8886 | .8840 | .8794 | .8748 |
| 869 | .9067 | .9022 | .8977 | .8942 | .8896 | .8850 | .8803 | .8757 |
| 870 | .9076 | .9031 | .8986 | .8951 | .8905 | .8859 | .8813 | .8767 |

Spheroids ſtanding.

| Height of the Segment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
|---|---|---|---|---|---|---|---|---|
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | ,85<br>,86<br>,87<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 871 | .9085 | .9040 | .8995 | .8960 | .8914 | .8868 | .8823 | .8777 |
| 872 | .9093 | .9049 | .9004 | .8969 | .8923 | .8878 | .8832 | .8787 |
| 873 | .9102 | .9057 | .9012 | .8978 | .8933 | .8887 | .8842 | .8796 |
| 874 | .9110 | .9066 | .9021 | .8987 | .8942 | .8897 | .8851 | .8806 |
| 875 | .9119 | .9075 | .9030 | .8997 | .8951 | .8906 | .8861 | .8816 |
| 876 | .9128 | .9084 | .9039 | .9006 | .8960 | .8915 | .8871 | .8826 |
| 877 | .9136 | .9093 | .9048 | .9015 | .8969 | .8925 | .8880 | .8836 |
| 878 | .9145 | .9101 | .9056 | .9024 | .8979 | .8934 | .8890 | .8845 |
| 879 | .9153 | .9110 | .9065 | .9033 | .8988 | .8944 | .8899 | .8855 |
| 880 | .9162 | .9119 | .9074 | .9042 | .8997 | .8953 | .8909 | .8865 |
| 881 | .9170 | .9127 | .9083 | .9051 | .9006 | .8962 | .8918 | .8875 |
| 882 | .9178 | .9136 | .9091 | .9060 | .9015 | .8971 | .8928 | .8884 |
| 883 | .9187 | .9144 | .9100 | .9068 | .9024 | .8981 | .8937 | .8894 |
| 884 | .9195 | .9153 | .9109 | .9077 | .9033 | .8990 | .8947 | .8904 |
| 885 | .9203 | .9161 | .9118 | .9086 | .9043 | .8999 | .8956 | .8914 |
| 886 | .9211 | .9169 | .9126 | .9095 | .9052 | .9008 | .8965 | .8923 |
| 887 | .9219 | .9178 | .9135 | .9104 | .9061 | .9017 | .8975 | .8933 |
| 888 | .9228 | .9186 | .9144 | .9112 | .9070 | .9027 | .8984 | .8943 |
| 889 | .9236 | .9195 | .9152 | .9121 | .9079 | .9036 | .8994 | .8952 |
| 890 | .9244 | .9203 | .9161 | .9130 | .9088 | .9045 | .9003 | .8962 |
| 891 | .9252 | .9211 | .9170 | .9139 | .9097 | .9054 | .9012 | .8972 |
| 892 | .9260 | .9219 | .9178 | .9147 | .9106 | .9063 | .9022 | .8981 |
| 893 | .9268 | .9228 | .9187 | .9156 | .9115 | .9073 | .9031 | .8991 |
| 894 | .9276 | .9236 | .9195 | .9164 | .9124 | .9082 | .9041 | .9000 |
| 895 | .9284 | .9244 | .9204 | .9173 | .9133 | .9091 | .9050 | .9010 |
| 896 | .9292 | .9252 | .9212 | .9182 | .9141 | .9100 | .9059 | .9020 |
| 897 | .9300 | .9260 | .9221 | .9190 | .9150 | .9109 | .9069 | .9029 |
| 898 | .9308 | .9269 | .9229 | .9199 | .9159 | .9119 | .9078 | .9039 |
| 899 | .9316 | .9277 | .9238 | .9207 | .9168 | .9128 | .9088 | .9048 |
| 900 | .9324 | .9285 | .9246 | .9216 | .9177 | .9137 | .9097 | .9058 |

Spheroids ſtanding.

| Height of the Seg-ment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
|---|---|---|---|---|---|---|---|---|
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | ,85<br>,86<br>,87<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
| | Seg. | Seg. | Seg | Seg. | Seg. | Seg. | Seg. | Seg. |
| 901 | ·9332 | ·9293 | ·9254 | ·9225 | ·9186 | ·9146 | ·9106 | ·9068 |
| 902 | ·9379 | ·9301 | ·9263 | ·9233 | ·9194 | ·9155 | ·9116 | ·9077 |
| 903 | ·9347 | ·9309 | ·9271 | ·9242 | ·9203 | ·9164 | ·9125 | ·9087 |
| 904 | ·9355 | ·9317 | ·9279 | ·9250 | ·9212 | ·9173 | ·9135 | ·9096 |
| 905 | ·9362 | ·9325 | ·9288 | ·9259 | ·9221 | ·9182 | ·9144 | ·9106 |
| 906 | ·9370 | ·9333 | ·9296 | ·9267 | ·9229 | ·9191 | ·9153 | ·9116 |
| 907 | ·9378 | ·9341 | ·9304 | ·9276 | ·9238 | ·9200 | ·9163 | ·9125 |
| 908 | ·9386 | ·9349 | ·9312 | ·9284 | ·9247 | ·9209 | ·9172 | ·9135 |
| 909 | ·9393 | ·9357 | ·9321 | ·9293 | ·9255 | ·9218 | ·9182 | ·9144 |
| 910 | ·9401 | ·9365 | ·9329 | ·9301 | ·9264 | ·9227 | ·9191 | ·9154 |
| 911 | ·9409 | ·9373 | ·9337 | ·9310 | ·9273 | ·9236 | ·9200 | ·9164 |
| 912 | ·9417 | ·9381 | ·9345 | ·9318 | ·9282 | ·9245 | ·9210 | ·9173 |
| 913 | ·9424 | ·9389 | ·9354 | ·9327 | ·9290 | ·9254 | ·9219 | ·9183 |
| 914 | ·9432 | ·9397 | ·9362 | ·9335 | ·9299 | ·9263 | ·9228 | ·9192 |
| 915 | ·9440 | ·9406 | ·9370 | ·9344 | ·9308 | ·9273 | ·9238 | ·9202 |
| 916 | ·9448 | ·9414 | ·9378 | ·9352 | ·9317 | ·9282 | ·9247 | ·9212 |
| 917 | ·9456 | ·9422 | ·9386 | ·9361 | ·9326 | ·9291 | ·9256 | ·9221 |
| 918 | ·9463 | ·9430 | ·9395 | ·9369 | ·9334 | ·9300 | 9265 | ·9231 |
| 919 | ·9471 | ·9438 | ·9403 | ·9378 | ·9343 | ·9309 | ·9275 | ·9240 |
| 920 | ·9479 | ·9446 | ·9411 | ·9386 | ·9352 | ·9318 | ·9284 | ·9250 |
| 921 | ·9486 | ·9454 | ·9419 | ·9394 | ·9361 | ·9327 | ·9293 | ·9260 |
| 922 | ·9494 | ·9461 | ·9427 | ·9402 | ·9369 | ·9336 | ·9302 | ·9269 |
| 923 | ·9501 | ·9469 | ·9435 | ·9411 | ·9378 | ·9344 | ·9312 | ·9279 |
| 924 | ·9508 | ·9476 | ·9443 | ·9419 | ·9386 | ·9353 | ·9321 | ·9288 |
| 925 | ·9515 | ·9484 | ·9451 | ·9427 | ·9395 | ·9362 | ·9330 | ·9298 |
| 926 | ·9523 | ·9492 | ·9459 | ·9435 | ·9403 | ·9371 | ·9339 | ·9307 |
| 927 | ·9530 | ·9499 | ·9467 | ·9443 | ·9412 | ·9380 | ·9348 | ·9317 |
| 928 | ·9537 | ·9507 | ·9475 | ·9452 | ·9420 | ·9388 | ·9358 | ·9326 |
| 929 | ·9545 | ·9514 | ·9483 | ·9460 | ·9429 | ·9397 | ·9367 | ·9335 |
| 930 | ·9552 | ·9522 | ·9491 | ·9468 | ·9437 | ·9406 | ·9376 | ·9345 |

Spheroids ſtanding.

| Height of the Segment. | 1 Var.<br>,67<br>,68<br>,69 | 2 Var.<br>,70<br>,71<br>,72<br>,73 | 3 Var.<br>,74<br>,75<br>,76 | 4 Var.<br>,77<br>,78<br>,79<br>,80 | 5 Var.<br>,81<br>,82<br>,83<br>,84 | 6 Var.<br>,85<br>,86<br>,87<br>,88 | 7 Var.<br>,89<br>,90<br>,91<br>,92 | 8 Var.<br>,93<br>,94<br>,95 |
|---|---|---|---|---|---|---|---|---|
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 931 | .9559 | .9529 | .9499 | .9476 | .9445 | .9415 | .9385 | .9355 |
| 932 | .9566 | .9537 | .9507 | .9484 | .9454 | .9424 | .9394 | .9364 |
| 933 | .9573 | .9544 | .9514 | .9492 | .9462 | .9432 | .9403 | .9374 |
| 934 | .9580 | .9552 | .9522 | .9500 | .9471 | .9441 | .9412 | .9383 |
| 935 | .9587 | .9559 | .9530 | .9509 | .9479 | .9450 | .9422 | .9393 |
| 936 | .9595 | .9566 | .9538 | .9517 | .9487 | .9459 | .9431 | .9402 |
| 937 | .9602 | .9574 | .9546 | .9525 | .9496 | .9468 | .9440 | .9412 |
| 938 | .9609 | .9581 | .9553 | .9533 | .9504 | .9476 | .9449 | .9421 |
| 939 | .9616 | .9589 | .9561 | .9541 | .9513 | .9485 | .9458 | .9430 |
| 940 | .9623 | .9596 | .9569 | .9549 | .9521 | .9494 | 9467 | .9440 |
| 941 | .9630 | .9603 | .9577 | .9557 | .9529 | .9503 | .9476 | .9450 |
| 942 | .9637 | .9611 | .9584 | .9565 | .9538 | .9512 | .9485 | .9459 |
| 943 | .9644 | .9618 | .9592 | .9573 | .9546 | .9520 | .9494 | .9469 |
| 944 | .9651 | .9626 | .9600 | .9581 | .9555 | .9529 | .9503 | .9478 |
| 945 | .9658 | .9633 | .9608 | .9589 | .9563 | .9538 | .9513 | .9488 |
| 946 | .9665 | .9640 | .9615 | .9597 | .9571 | .9547 | .9522 | .9497 |
| 947 | .9672 | .9648 | .9623 | .9605 | .9580 | .9556 | .9531 | .9507 |
| 948 | .9679 | .9655 | .9631 | .9613 | .9588 | .9564 | .9540 | .9516 |
| 949 | .9686 | .9663 | .9638 | .9621 | .9597 | .9573 | .9549 | .9525 |
| 950 | .9693 | .9670 | .9646 | .9629 | .9605 | .9582 | .9558 | .9535 |
| 951 | .9700 | .9677 | .9653 | .9637 | .9613 | .9590 | .9567 | .9544 |
| 952 | .9706 | .9684 | .9661 | .9645 | .9621 | .9599 | .9576 | .9554 |
| 953 | .9713 | .9691 | .9668 | .9652 | .9630 | .9607 | .9585 | .9563 |
| 954 | .9720 | .9698 | .9676 | .9660 | .9638 | .9616 | .9594 | .9573 |
| 955 | .9726 | .9705 | .9683 | .9668 | .9646 | .9624 | .9603 | .9582 |
| 956 | .9733 | .9713 | .9691 | .9676 | .9654 | .9633 | .9612 | .9591 |
| 957 | .9740 | .9720 | .9698 | .9684 | .9662 | .9641 | .9621 | .9601 |
| 958 | .9747 | .9727 | .9706 | .9691 | .9671 | .9650 | .9630 | .9610 |
| 959 | .9753 | .9734 | .9713 | .9699 | .9679 | .9658 | .9639 | .9620 |
| 960 | .9760 | .9741 | .9721 | .9707 | .9687 | .9667 | .9648 | .9629 |

Spheroids ſtanding.

| Height of the Segment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
|---|---|---|---|---|---|---|---|---|
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | 85,<br>86,<br>87,<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
| | Seg | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 961 | .9766 | .9748 | .9728 | .9715 | .9695 | .9675 | .9657 | .9638 |
| 962 | .9773 | .9755 | .9736 | .9722 | .9703 | .9684 | .9666 | .9648 |
| 963 | .9779 | .9761 | .9743 | .9730 | .9711 | .9692 | .9675 | .9657 |
| 964 | .9786 | .9768 | .9750 | .9737 | .9719 | .9701 | .9684 | .9666 |
| 965 | .9792 | .9775 | .9757 | .9745 | .9727 | .9709 | .9692 | .9675 |
| 966 | .9798 | .9782 | .9765 | .9753 | .9735 | .9718 | .9701 | .9685 |
| 967 | .9805 | .9789 | .9772 | .9760 | .9743 | .9726 | .9710 | .9694 |
| 968 | .9811 | .9795 | .9779 | .9768 | .9751 | .9735 | .9719 | .9703 |
| 969 | .9818 | .9802 | .9787 | .9775 | .9759 | .9743 | .9728 | .9713 |
| 970 | .9824 | .9809 | .9794 | .9783 | .9767 | .9752 | .9737 | .9722 |
| 971 | .9830 | .9816 | .9801 | .9790 | .9775 | .9760 | .9746 | .9731 |
| 972 | .9836 | .9822 | .9808 | .9798 | .9783 | .9769 | .9755 | .9741 |
| 973 | .9842 | .9829 | .9815 | .9805 | .9791 | .9777 | .9764 | .9750 |
| 974 | .9848 | .9835 | .9822 | .9813 | .9799 | .9786 | .9773 | .9759 |
| 975 | .9855 | .9842 | .9829 | .9820 | .9807 | .9794 | .9781 | .9768 |
| 976 | .9861 | .9849 | .9837 | .9827 | .9815 | .9802 | .9790 | .9778 |
| 977 | .9867 | .9855 | .9844 | .9835 | .9823 | .9811 | .9799 | .9787 |
| 978 | .9873 | .9862 | .9851 | .9842 | .9831 | .9819 | .9808 | .9796 |
| 979 | .9879 | .9868 | .9858 | .9850 | .9839 | .9828 | .9817 | .9806 |
| 980 | .9885 | .9875 | .9865 | .9857 | .9847 | .9836 | .9826 | .9815 |
| 981 | .9891 | .9881 | .9872 | .9864 | .9855 | .9844 | .9835 | .9824 |
| 982 | .9897 | .9888 | .9879 | .9871 | .9862 | .9852 | .9843 | .9834 |
| 983 | .9902 | .9894 | .9885 | .9879 | .9870 | .9861 | .9852 | .9843 |
| 984 | .9908 | .9900 | .9892 | .9886 | .9877 | .9869 | .9861 | .9852 |
| 985 | .9914 | .9906 | .9899 | .9893 | .9885 | .9877 | .9869 | .9861 |
| 986 | .9920 | .9913 | .9906 | .9900 | .9893 | .9885 | .9878 | .9871 |
| 987 | .9926 | .9919 | .9913 | .9907 | .9900 | .9893 | .9887 | .9880 |
| 988 | .9931 | .9925 | .9919 | .9915 | .9908 | .9902 | .9896 | .9889 |
| 989 | .9937 | .9932 | .9926 | .9922 | .9915 | .9910 | .9904 | .9899 |
| 990 | .9943 | .9938 | .9933 | .9929 | .9923 | .9918 | .9913 | .9908 |

Spheroids ſtanding.

| Height of the Segment | Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
|---|---|---|---|---|---|---|---|---|
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>·73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | ,85<br>,86<br>,87<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 99 | ·9949 | ·9944 | ·9940 | ·9936 | 9931 | ·9926 | ·9922 | ·9917 |
| 992 | ·9954 | ·9950 | 9946 | ·9943 | ·9939 | ·9934 | ·9930 | ·9926 |
| 993 | ·9960 | ·9957 | ·9953 | ·9950 | ·9947 | ·9943 | ·9939 | ·9936 |
| 994 | ·9966 | ·9963 | ·9960 | ·9957 | ·9954 | ·9951 | ·9948 | ·9945 |
| 995 | ·9971 | ·9969 | ·9966 | ·9964 | ·9962 | ·9959 | ·9956 | ·9954 |
| 996 | ·9977 | ·9975 | ·9973 | ·9972 | ·9969 | ·9967 | ·9965 | ·9963 |
| 997 | ·9983 | ·9981 | 9980 | ·9979 | ·9977 | ·9975 | ·9974 | ·9972 |
| 998 | ·9989 | ·9988 | ·9987 | ·9986 | ·9985 | ·9984 | ·9983 | ·9982 |
| 999 | ·9994 | ·9994 | ·9993 | ·9993 | ·9992 | ·9992 | ·9991 | ·9991 |
| 1000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | ,00001 | 1.0000 |

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# EXPLANATION
## Of the foregoing
## TABLE of SEGMENTS.

THE Table is divided into Nine Columns. In the firſt are placed the Depths or Heights of the Segments, expreſſed in Thouſandth Parts of the Cask's Length; and in the other Eight Columns, which are diſtinguiſhed by 1 Var. 2 Var. 3 Var. *&c.* are placed the Segments anſwering to thoſe Depths, expreſſed in Ten thouſandth Parts of the Cask's Content: And, at the Top of the Table, in each reſpective Column of Segments, are put the Values of the Head Diameters of ſuch Casks as thoſe Segments are proper to, expreſſed in Hundredth Parts of the Bung Diameter, which conſequently determine the Variety, and direct to the Column the Segments are to be taken out of.

Therefore, to compute the Quantity of any Ullage by the ſaid Table, obſerve this Rule.

Firſt, Divide the Head Diameter by the Bung Diameter, and ſeek the Quotient (conſiſting of two Places of Decimals) among the Numbers at the Top of the Table. Secondly, Divide the wet or dry Inches, according as the full or empty Part is to be found, by the Cask's Length, and ſeek that Quotient (conſiſting always of three Places of Decimals) in the firſt Column of the Table; then taking the Segment, which ſtands under

the

the firſt Quotient and againſt the laſt, and multiplying it into the Cask's Content, you will have the Content of the Ullage, that is, the Quantity of Liquor remaining in any Cask, if the wet Inches were taken, or the Quantity drawn out, if the dry Inches were taken.

*Example* 1. There is a ſpheroidical Cask, whoſe Length is 54 Inches, the Content 215 Gallons, and the wet Inches, or Depth of Liquor in the Cask. 12.3 Inches; the Bung Diameter being 37.1, and the Head Diameter 27.8. It is required to find how much Liquor is in the Cask.

The Head Diameter divided by the Bung Diameter, gives .75, which being found at the Top of the Table, in the 3d Column of Segments, ſhews that the Cask is of the 3d Variety, and that the Segment is to be taken out of that Column. And the wet Inches being divided by the Length, gives .228 nearly. Therefore looking for 228 in the firſt Column of the Table, againſt it, in the third Column of Segments I find .1953, which being multiplied into 215, gives 41.9895 for the true Quantity of Liquor in the Cask.

*Example* 2. There is a ſpheroidical Cask having the ſame Length, Content, and wet Inches as above; but the Bung Diameter is 35.4, and Head Diameter 31.9. required the Quantity of Liquor in this Cask.

The Head Diameter divided by the Bung Diameter, gives 90. which being found at the Top of the Table in the 7th Column of Segments, the Cask is of the 7th Variety, and the Segment to be taken out of that Column.

Therefore againſt 228 I find, in the 7th Column of Segments, .2151, which being multiplied into 215 gives 46.2465 for the Quantity of Liquor in the Cask.

*Example* 3. Admit the wet Inches in the firſt Example be increaſed to 41.7. what will the Increaſe of Liquor be?

41.7 divided by 54 gives .772, againſt which, in the 3d Column of Segments, is .8047, multiply this into 215, and you'll have 173.0105 for the whole Quantity of Liquor in the Cask.

From

From 173.0105 take 41.9895 (the Quantity found in the firſt Example), and there will remain 131.021 for the Increaſe of Liquor.

*Example* 4. There is a ſpheroidical Cask, whoſe Length is 50.6, Content 177 Wine Gallcns, and the wet Inches ſuppoſed to be decreaſed from 34.4 to 13.9; the Bung Diameter being 35, and the Head Diameter 25.2, required the Quantity of Liquor drawn out ſince the firſt Ullage was taken.

The Head Diameter divided by the Bung Diameter gives . 72 (2d Var.)
34.4 divided by 50.6 gives .680 nearly.
13.9 divided by 50.6 gives .275 nearly.

Segment (*per* 2d Col.) againſt $\begin{cases} 680 \text{ is } .7111 \\ 275 \quad\ \ .2396 \end{cases}$

Difference .4715
Content 177

33005
33005
4715

Decreaſe of Liquor 83.4555

If the Contents of any Cask are deſired at every Inch of the Depth, it may be effected in the following manner.

Divide Unity by the Length of the Cask, and the Quotient will be the Tabular Height of the Segment for 1 Inch, which doubled will be the Tabular Height for 2 Inches, and tripled will be the Tabular Height for 3 Inches, *&c.* Let the Segments anſwering to theſe Heights be ſeverally multiplied into the whole Content, and the Products will be the Segmental Contents.

EXAM-

## EXAMPLE.

Let there be a Spheroidical Cask, whoſe Bung Diameter is 37.9, Head Diameter 25.3, Length 54, and Content 215.

(1 Var.)

1 divided by 54 gives .01852 nearly, or 19 Thouſandth Parts nearly; this doubled is .03704, or 37 Thouſandth Parts, and tripled is .05556, or 56 Thouſandth Parts nearly, *&c.*

$$\text{Segm. of the 1ſt Var. againſt} \left\{\begin{array}{c} 19 \\ 37 \\ 56 \end{array}\right\} \text{is} \left\{\begin{array}{l} .0109 \\ .0221 \\ .0349 \end{array}\right.$$

$$\text{And} \left\{\begin{array}{l} .0109 \\ .0221 \\ .0349 \end{array}\right\} \begin{array}{c}\text{multiplied by 215} \\ \text{gives}\end{array} \left\{\begin{array}{l} 2.3 \text{ Cont. at 1 Inch} \\ 4.7 \text{ Cont. at 2 Inches} \\ 7.5 \text{ Cont. at 3 Inches} \end{array}\right.$$

And ſo on as *per* following Table.

| Wet expreſs'd in | | Segments 1 Var. | Quant. in the Cask. | Dry Inches |
|---|---|---|---|---|
| Inches. | 1000Pts. of the Length. | | | |
| 1 | 19 | .0109 | 2.3 | 53 |
| 2 | 37 | .0221 | 4.7 | 52 |
| 3 | 56 | .0349 | 7.5 | 51 |
| 4 | 74 | .0477 | 10.2 | 50 |
| 5 | 93 | .0622 | 13.4 | 49 |
| 6 | 111 | .0764 | 16.4 | 48 |
| 7 | 130 | .0924 | 19.9 | 47 |
| 8 | 148 | .1080 | 23.2 | 46 |
| 9 | 167 | .1254 | 26.9 | 45 |
| 10 | 185 | .1423 | 30.6 | 44 |
| 11 | 204 | .1607 | 34.5 | 43 |
| 12 | 222 | .1788 | 38.4 | 42 |
| 13 | 241 | .1983 | 42.6 | 41 |
| 14 | 259 | .2173 | 46.7 | 40 |
| 15 | 278 | .2380 | 51.2 | 39 |
| 16 | 296 | .2578 | 55.4 | 38 |
| 17 | 315 | .2790 | 60. | 37 |
| 18 | 333 | .2997 | 64.4 | 36 |
| 19 | 352 | .3216 | 69.1 | 35 |
| 20 | 371 | .3440 | 74. | 34 |
| 21 | 389 | .3652 | 78.5 | 33 |
| 22 | 408 | .3880 | 83.4 | 32 |
| 23 | 426 | .4097 | 88.1 | 31 |
| 24 | 445 | .4327 | 93. | 30 |
| 25 | 463 | .4547 | 97.7 | 29 |
| 26 | 482 | .4780 | 102.8 | 28 |
| 27 | 500 | .5000 | .1075 | 27 |

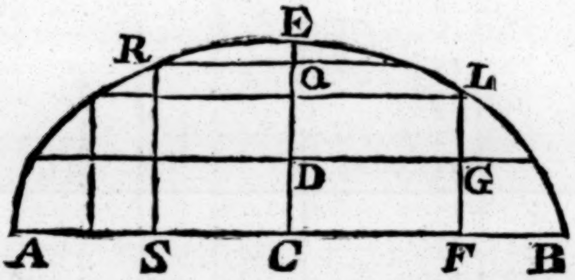
| Wet Inches | Quant in the Cask. | Dry Inches |
|---|---|---|
| 28 | 112.2 | 26 |
| 29 | 117.3 | 25 |
| 30 | 122. | 24 |
| 31 | 126.9 | 23 |
| 32 | 131.6 | 22 |
| 33 | 136.5 | 21 |
| 34 | 141. | 20 |
| 35 | 145.9 | 19 |
| 36 | 150.6 | 18 |
| 37 | 155. | 17 |
| 38 | 159.6 | 16 |
| 39 | 163.8 | 15 |
| 40 | 168.3 | 14 |
| 41 | 172.4 | 13 |
| 42 | 176.6 | 12 |
| 43 | 180.5 | 11 |
| 44 | 184.4 | 10 |
| 45 | 188.1 | 9 |
| 46 | 191.8 | 8 |
| 47 | 195.1 | 7 |
| 48 | 198.6 | 6 |
| 49 | 201.6 | 5 |
| 50 | 204.8 | 4 |
| 51 | 207.5 | 3 |
| 52 | 210.3 | 2 |
| 53 | 212.7 | 1 |
| 54 | 215. | 0 |

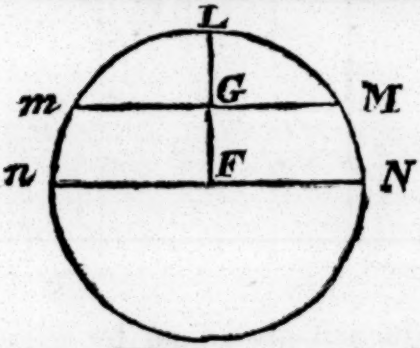
The Contents, after 27 Inches, are found by ſubſtracting thoſe already obtained from the whole Content, beginning with the Content at 26 Inches, and ſo proceeding upwards. Thus, the Content at 26 Inches is 102.8, which, taken from 215, leaves 112.2, the Content at 28 Inches, &c.

## PROBLEM.

*To cube the Segment* CDGF *of the Spheroid* AEB, *cut off by the four Planes* AB *paſſing through the Axis,* DG *parallel to* AB, CDE *perpendicularly biſecting the Axis, and* FG *parallel to* CE.

Make CB$=a$, CE$=c$, CF$=x$, and FG$=y$; then $\overline{FL}^2=c^2-\frac{c^2x^2}{a^2}$ will expreſs the Nature of the generating Ellipſis.





With the Radius FL deſcribe a Circle, and draw the Ordinate $m$ G M, and the Diameter $n$FN; and the Part $mn$MN of this Circle multiplied into $\dot{x}$, will be the Fluxion of the Segment CDGF, whoſe Value is found thus: Make FL$=r$, and the Semi-Ordinate GM will be $=\sqrt{r^2-y^2}$; whence $\dot{y}\sqrt{r^2-y^2}$ will be the Fluxion of the Space F G M N, and the Fluent of this multiplied by 2 is $=2ry-\frac{y^3}{3r}-\frac{y^5}{20r^3}-\frac{y^7}{56r^5}-\frac{5y^9}{576r^7}-$ &c.

*&c.* = the Value of the circular Space $mn$ MN. If therefore, in this Series, we ſubſtitute $\sqrt{c^2 - \frac{c^2x^2}{a^2}}$ for $r$, and multiply it into $\dot{x}$, there will come out

$$\begin{array}{llll}
2c\dot{x}y - \frac{\dot{x}}{3c}y^3 & - \frac{\dot{x}}{20c^3}y^5 & - \frac{\dot{x}}{56c^5}y^7 & - \&c. \\
- \frac{c\dot{x}x^2}{a^2} & - \frac{\dot{x}x^2}{6ca^2} & - \frac{3\dot{x}x^2}{40c^3a^2} & - \&c. \\
- \frac{c\dot{x}x^4}{4a^4} & - \frac{\dot{x}x^4}{8ca^4} & - \&c. & \\
- \frac{c\dot{x}x^6}{8a^6} & - \&c. & & \\
- \&c. & & &
\end{array}$$

for the Fluxion of the Segment CDGF; and the Fluent of each Term being taken, we ſhall have for the Solidity thereof

$$\begin{array}{llll}
2cxy - \frac{x}{3c}y^3 & - \frac{x}{20c^3}y^5 & - \frac{x}{56c^5}y^7 & - \&c. \\
- \frac{cx^3}{3a^2} & - \frac{x^3}{18ca^2} & - \frac{x^3}{40c^3a^2} & - \&c. \\
- \frac{cx^5}{20a^4} & - \frac{x^5}{40ca^4} & - \&c. & \\
- \frac{cx^7}{56a^6} & - \&c. & & \\
- \&c. & & &
\end{array}$$

In which Series it may be obſerved, that the numeral Coefficients of the higheſt Terms ($2, -\frac{1}{3}, -\frac{1}{20}, -\frac{1}{56}$, – *&c.*) are produced *in infinitum*, by multiplying the firſt Coefficient 2 continually, by the Terms of this Progreſſion – $\frac{1 \times 1}{2 \times 3}, \frac{1 \times 3}{4 \times 5}, \frac{3 \times 5}{6 \times 7}, \frac{5 \times 7}{8 \times 9}, \frac{7 \times 9}{10 \times 11}$, *&c.*

And the numeral Coefficients of the Terms deſcending in any one of the Columns are produced, *in infinitum*, by multiplying continually the Coefficient of the higheſt Term, by the ſame Progreſſion, in the firſt Column; but in the ſecond by the Terms of this $\frac{1 \times 1}{2 \times 3}$, $\frac{3 \times 3}{4 \times 5}$, $\frac{5 \times 5}{6 \times 7}$, $\frac{7 \times 7}{8 \times 9}$, *&c.* in the third by the Terms of this $\frac{3 \times 1}{2 \times 3}$, $\frac{5 \times 3}{4 \times 5}$, $\frac{7 \times 5}{6 \times 7}$, $\frac{9 \times 7}{8 \times 9}$, *&c.* in the fourth by the Terms of this $\frac{5 \times 1}{2 \times 3}$, $\frac{7 \times 3}{4 \times 5}$, $\frac{9 \times 5}{6 \times 7}$, *&c.* in the fifth by the Terms of this $\frac{7 \times 1}{2 \times 3}$, $\frac{9 \times 3}{4 \times 5}$, $\frac{11 \times 5}{6 \times 7}$, *&c.* and ſo on *in infinitum*.

By the Help of this Problem, the Ullage of any Spheroidical Cask (whoſe Axis is parallel to the Horizon), may be very exactly found: For, if the above Series be doubled, and then ſo much of the Cask's Content be found by it, as is contained between the Liquor's Surface and the Middle of the Cask; and that Quantity be added to half the Content, if the Cask is above half full, or ſubſtracted from half the Content, if the Cask is leſs than half full, the Sum or Remainder will be the Quantity of Liquor in the Cask.

And from hence alſo, we have a Method for conſtructing ſuch a Table of Segments for Spheroidical Casks lying, as I have already given for Standing Casks, the Bung Diameters being to the Head Diameters in the ſame given Ratios: For in this Caſe, as well as in that, it is very evident, that the Segments will vary as theſe Proportions vary. But it is neceſſary here to obſerve, that when C D (or $y$) is greater than F L, as ſuppoſe when C D becomes equal to C Q, the Segment C Q R S muſt be found, in which the Values of C F (or $x$) and F L are changed; that is, in the Series for C F we muſt write C S, and for F L we muſt write R S, and the Space C Q R S muſt be added to, or ſubſtracted from, the Space

Space C E R S; which muſt be duly obſerved in finding all the Segments after C D becomes greater than F L; otherwiſe the Numbers ſought will not come out true.

Suppoſe the generating Curve E L B to be the common Parabola, then, if, in the Value of the circular Space *mn* MN, we ſubſtitute for *r* it's equal $\left(\sqrt{c^2 - \frac{c^2 x}{a}}\right)$ we ſhall get for the Value of the Segment C D G F this Series,

$$\begin{array}{lllll}
2cxy & -\frac{x}{3c}y^3 & -\frac{x}{20c^3}y^5 & -\frac{x}{56c^5}y^7 & -\ \&c. \\
-\frac{cx^2}{2a} & -\frac{x^2}{12ac} & -\frac{3x^2}{80ac^3} & -\ \&c. & \\
-\frac{cx^3}{12a^2} & -\frac{x^3}{24a^2c} & -\ \&c. & & \\
-\frac{cx^4}{32a^3} & -\ \&c. & & & \\
-\ \&c. & & & &
\end{array}$$

In which the numeral Coefficients of the higheſt Terms ($2, -\frac{1}{3}, -\frac{1}{20}, -\frac{1}{56}, -$ &c.) are produced *in infinitum*, by multiplying the firſt Coefficient 2 continually, by the Terms of this Progreſſion $-\frac{1\times1}{2\times3}, \frac{1\times3}{4\times5}, \frac{3\times5}{6\times7}, \frac{5\times7}{8\times9}, \frac{7\times9}{10\times11}$, &c.

And the num. Coeff. of the Terms deſcending in any one of the Col. are produced *in infinitum* by multiplying continually the Coefficient of the higheſt Term, in the firſt Column, by the Terms of this Progreſſion $-\frac{1\times1}{2\times2}, \frac{1\times2}{4\times3}, \frac{3\times3}{6\times4}, \frac{5\times4}{8\times5}$, &c. in the ſecond by the Terms of this $\frac{1\times1}{2\times2}, \frac{3\times2}{4\times3}, \frac{5\times3}{6\times4}$, &c. in the third by the Terms of of this $\frac{3\times1}{2\times2}, \frac{5\times2}{4\times3}, \frac{7\times3}{6\times4}$, &c. in the fourth by the Terms of this $\frac{5\times1}{2\times2}, \frac{7\times2}{4\times3}, \frac{9\times3}{6\times4}$, &c. in the fifth by the Terms of this $\frac{7\times1}{2\times2}, \frac{9\times2}{4\times3}, \frac{11\times3}{6\times4}$, &c. and ſo on *in infinitum*.

By the laſt Series, the Ullage of any lying Cask, in the Form of a Parabolic Conoid, may be very exactly obtained. But, in order to render theſe Series more uſeful in calculating Tables of Segments, let $d$ be put $= \overline{CE}^2 - \overline{FL}^2$, and for $a^2$ ſubſtitute its Equal $\left(\frac{c^2x^2}{d}\right)$ in the Series for the ſpheroidical Segment; and for $a$ its Equal $\left(\frac{c^2x}{d}\right)$ in the Series for the conoidical Segment; alſo let them be divided by $c^2x$. Then for the ſpheroidical Segment CDGF we ſhall have this:

$$\begin{array}{llllllllll}
 & \frac{2}{c} & y - & \frac{1}{3c^3} & y^3 - & \frac{1}{20c^5} & y^5 - & \frac{1}{56c^7} & y^7 - & \&c. \\
- & \frac{d}{3c^3} & - & \frac{d}{18c^5} & - & \frac{d}{40c^7} & - & \&c. & & \\
- & \frac{d^2}{20c^5} & - & \frac{d^2}{40c^7} & - & \&c. & & & & \\
- & \frac{d^3}{56c^7} & - & \&c. & & & & & & \\
- & \&c. & & & & & & & &
\end{array}$$

And for the conoid. Segment CDGF this:

$$\begin{array}{llll}
\frac{2}{c}\,y & -\frac{1}{3c^3}\,y^3 & -\frac{1}{20c^5}\,y^5 & -\frac{1}{56c^7}\,y^7 - \&c. \\
-\frac{d}{2c^3} & -\frac{d}{12c^5} & -\frac{3d}{80c^7} & -\&c. \\
-\frac{d^2}{12c^5} & -\frac{d^2}{24c^7} & -\&c. & \\
-\frac{d^3}{32c^7} & -\&c. & & \\
-\&c. & & &
\end{array}$$

Let theſe, when brought into Numbers, be divided by 3, 141592, &c. and let the reſulting Quotients be multiplied into the Ratio of the Cask's Content to its circumſcribing Cylinder, then we ſhall have the Value of the Segment CDGF expreſſed by a Decimal Fraction (Half the Cask's Content being the Integral Quantity), which being taken from .5, will leave the Segment DEGL expreſſed in the like fractional Parts. And theſe Segments being doubled, will be expreſſed by the ſame Decimal Fractions, the whole Content of the Cask being made the integral Quantity.

Or, if we call the Ratio of the Bung Diameter to the Head Diameter $r$, and make $d = 1 - rr$, and $z = \frac{y}{c}$, we ſhall have

For

For the ſpheroidical Segment:

$$\begin{array}{llllll}
2\,z & -\dfrac{1}{3}z^3 & -\dfrac{1}{20}z^5 & -\dfrac{1}{56}z^7 & -\ \&c. \\
-\dfrac{d}{3} & -\dfrac{d}{18} & -\dfrac{d}{40} & -\ \&c. & \\
-\dfrac{d^2}{20} & -\dfrac{d^2}{40} & -\ \&c. & & \\
-\dfrac{d^3}{56} & -\ \&c. & & & \\
-\ \&c. & & & &
\end{array}$$

For the conoidical Segment:

$$\begin{array}{llllll}
2\,z & -\dfrac{1}{3}z^3 & -\dfrac{1}{20}z^5 & -\dfrac{1}{56}z^7 & -\ \&c. \\
-\dfrac{d}{2} & -\dfrac{d}{12} & -\dfrac{3d}{80} & -\ \&c. & \\
-\dfrac{d^2}{12} & -\dfrac{d^2}{24} & -\ \&c. & & \\
-\dfrac{d^3}{32} & -\ \&c. & & & \\
-\ \&c. & & & &
\end{array}$$

And the firſt of theſe being multiplied by

$$\overset{3}{\overline{\overline{2+rr}\times 3{\cdot}141592,\ \&c.}}$$

and the laſt by $\overset{2}{\overline{\overline{1+rr}\times 3{\cdot}\,141592}}$, *&c.* we ſhall have the Values of the ſame Segments expreſſed by the ſame Decimal Fractions.

For Example, Let the Bung Diameter of a ſpheroidical Cask $= 2c = 100$, the Head Diam. $= 2FL = 80$, then $r = .80$, and $d = .36$. Alſo let the Height of the Segment D E G L be $= 20 = ED$, then $z = .60$.

And

$$
\begin{array}{lrr}
\text{And} & -\frac{d}{3} = - & .120000 \\
 & -\frac{d^2}{20} = - & 6480 \\
 & -\frac{d^3}{56} = - & 833 \\
 & -\frac{5\,d^4}{576} = - & 145 \\
 & -\frac{7\,d^5}{1408} = - & 30 \\
\hline
 & - & .127488
\end{array}
$$

$2 - .127488 = 1.872512$, and $1.872512 \times z = 1.123507 =$ the Sum of the firſt Col. of the Series.

$$
\begin{array}{rr}
-\frac{1}{3} = - & .333333 \\
-\frac{d}{18} = - & 20000 \\
-\frac{d^2}{40} = - & 3240 \\
-\frac{5\,d^3}{336} = - & 694 \\
-\frac{35\,d^4}{3456} = - & 170 \\
\hline
- & .357437
\end{array}
$$

And $- .357437 \times z^3 = - .077206 =$ the Sum of the 2d Col.

$$\begin{array}{rr}
-\frac{1}{20} = - & .050000 \\
-\frac{d}{40} = - & 9000 \\
-\frac{3d^2}{160} = - & 2430 \\
-\frac{d^3}{64} = - & 729 \\
\hline
- & .062159
\end{array}$$

And $-.062159 \times z^5 = -.004833 =$ the Sum of the 3d Col.

$$\begin{array}{rr}
-\frac{1}{56} = - & .017857 \\
-\frac{5d}{336} = - & 5357+ \\
-\frac{d^2}{64} = - & 2025 \\
\hline
- & .025239
\end{array}$$

And $-.025239 \times z^7 = -.000706 =$ the Sum of the 4th Col.

$$\begin{array}{rr}
-\frac{5}{576} = - & .008681 \\
-\frac{35d}{3456} = - & 3646 \\
\hline
- & .012327
\end{array}$$

And $-.012327 \times z^9 = -.000124 =$ the Sum of the 5th Col.

$$-\frac{7}{1408} = -.004971$$

And $-.004971 \times z^{11} = -.000018 =$ Sum of the 6th Col.

Now

Now collecting all the negative Sums together, we ſhall have

$$\begin{array}{rr} - & .077206 \\ - & 4833 \\ - & 706 \\ - & 124 \\ - & 18 \\ \hline - & .082887 \\ \hline \end{array}$$

And ſubſtracting .082887 from (1.123507) the Sum of the 1ſt Col. there will remain 1.04062 = the Sum of the whole Series. And 1.04062 being multiplied by (.361715) $\frac{3}{2+rr \times 3.141592}$, we ſhall have .3764, &c. which taken from .5, there will remain .1236 = twice the Segment D E G L, expreſſed in ten Thouſandth Parts of the Cask's Content.

Again, let the Height of the Segment D E G L be = 30, then $z = .40$.

$$\begin{array}{lrcl} \text{And} & 1.872512 \times z & = & .749005 \\ - & .357437 \times z^3 & = & -.022876 \\ - & .062159 \times z^5 & = & -.000636 \\ - & .025239 \times z^7 & = & -.000041 \end{array}$$

Now taking (.023553) the Sum of the negat. Columns from (.749005) the affirmat. Column, there will remain .725452 = the Sum of the whole Series, which multiplied by .361715 gives .2624, and this taken from .5 leaves .2376 = twice the Segment D E G L, in Ten thouſandth Parts of the Cask's Content, when the Height thereof is 30 hundredth Parts of the Bung Diameter.

Let the laſt-mentioned Cask be ſuppoſed in the Form of the middle Fruſtum of two parabolic Conoids, and let the Height of the ſame Segment be 20, then $d = .36$, and $z = .60$, as before.

$$\begin{array}{rr}
-\frac{d}{2} = - & .180000 \\
-\frac{d^2}{12} = - & 10800 \\
-\frac{d^3}{32} = - & 1458 \\
-\frac{d^4}{64} = - & 262 \\
-\frac{d^5}{768} = - & 55 \\
\hline
- & .192575
\end{array}$$

$2 - .192575 = 1.807425$, and $1.807425 \times z = 1.084455 =$ the Sum of the 1ſt Col. of the Series.

$$\begin{array}{rr}
-\frac{1}{3} = - & .333333 \\
-\frac{d}{12} = - & 30000 \\
-\frac{d^2}{24} = - & 5400 \\
-\frac{5d^3}{192} = - & 1215 \\
-\frac{7d^4}{384} = - & 306 \\
\hline
- & .370254
\end{array}$$

And $-.370254 \times z^3 = -.079975 =$ the Sum of the 2d Column.

$$\begin{array}{rr}
-\frac{1}{20} = - & .050000 \\
-\frac{3d}{80} = - & 13500 \\
-\frac{d^2}{32} = - & 4050 \\
-\frac{7d^3}{256} = - & 1271 \\
\hline
- & .068821
\end{array}$$

And $- .068821 \times z^5 = - .005351 =$ the Sum of the 3d Column.

$$\begin{array}{rr}
-\frac{1}{56} = - & .017857 \\
-\frac{5d}{224} = - & 8035 \\
-\frac{5d^2}{192} = - & 3375 \\
\hline
- & .029267
\end{array}$$

And $- .029267 \times z^7 = - .000819 =$ the Sum of the 4th Column.

$$\begin{array}{rr}
-\frac{5}{576} = - & .008681 \\
-\frac{35d}{2304} = - & 5468 \\
\hline
- & .014149
\end{array}$$

And $- .014149 \times z^9 = - .000142 =$ the Sum of the 5th Column.

$$-\frac{7}{1408} = -\ .004971$$

And $-\ .004971 \times z^{11} = -\ .000018 =$ the Sum of the 6th Column.

| | | |
|---|---|---|
| | | — .079975 |
| Firſt Column | 1.084455 | — 5351 |
| Sum of the reſt | .086305 | — 819 |
| | | — 142 |
| Sum of the Series | 0.998150 | — 18 |
| | | — .086305 |

.99815 multiplied by (.388182) $\frac{2}{\overline{1+rr}\times 3.141592}$, $= .38746$, which taken from .5 leaves $.1125 =$ the conoidical Segment anſwering to 20 hundredth Parts of the Bung Diameter.

Let the Height of the Segment be 30, then $z = .40$, as before.

$$\begin{aligned}
\text{And}\quad 1.807425 \times z &= .722970 \\
-\ .370254 \times z^{3} &= -\ .023696 \\
-\ .068821 \times z^{5} &= -\ .000705 \\
-\ .029267 \times z^{7} &= -\ .000048
\end{aligned}$$

The Sum of the negat. Columns (.024449) being taken from (.722970) the affirmat. Column, there remains (.698521) the Sum of the whole Series, which multiplied by .388182, gives .2712 nearly, and this taken from .5 leaves $.2288 =$ the conoidical Segment anſwering to 30 hundredth Parts of the Bung Diameter.

And after the ſame manner may the Segment for any other Height be found, obſerving, when the Height is leſs than half the Difference between the Bung and Head Diameters, that is, when $y$ or F G is greater than F L, to make $d = 1 - zz$, and for the Fractions $\frac{3}{\overline{2+rr}\times 3.141592}$, *&c.* $\frac{2}{\overline{1+rr}\times 3.141592}$, *&c.* to ſubſtitute theſe,

$\frac{3}{\overline{2+zz}\times 3.141592,\ \&c.}$, $\frac{2}{\overline{1+zz}\times 3.141592,\ \&c.}$ Alſo to multiply the reſulting numerical Segment, if ſpheroidical, by $\frac{2+z^2}{2+r^2}\times\surd\frac{1-z^2}{1-r^2}$, but if conoidical, by $\frac{1-z^4}{1-r^4}$. But in ſuch Caſes the ſpheroidical Segment will be more readily found by this Theorem $\frac{6z^2-4z^3}{\overline{2+rr}\times\surd\overline{1-rr}}$, wherein $z$ denotes the Ratio of the Bung Diam. to the Height of the Segment, and $r$ the Ratio of the Bung Diam. to the Head Diam. And the conoidical Segment, in ſuch Caſes, will be more readily found by this Theorem

$\frac{\overline{24x^2-32x^3}\times\overline{1-z^2}}{9\times .7854,\ \&c.\times\overline{1-r^4}\times\surd\overline{1-r^2}}$, wherein $x$ denotes the Ratio of the Bung Diam. to the Height of the Segment, $z$ denotes the Ratio of the Bung Diam. to the Difference between the Bung. Diam. and twice the Height of the Segment, and $r$ the Ratio of the Bung Diam. to the Head Diam.

*Example.* Let the Bung Diam. of a ſpheroidical Cask be 100, the Head Diam. 80, and the Height of the Segment 5, then $z = .05$, and $r = .80$.

$$6z^2-4z^3 = .0145.$$

$\overline{2+r^2}\times\surd\overline{1-r^2} = 1.584$, and $\frac{.0145}{1.584} = .0091 =$ the Segment anſwering to 5 hundredth Parts of the Bung Diam.

Suppoſe the Caſk to be conoidical, then $x = .05$, $z = .90$, and $r = .80$.

And $\frac{\overline{24x^2-32x^3}+\overline{1-z^2}}{9\times .7854\times\overline{1-r^4}\times\surd\overline{1-r^2}} = .0042 =$ the conoidical Segment anſwering to 5 hundredth Parts of the Bung Diam.

# A
# TABLE
# OF
# *SEGMENTS*,
# FOR
# EIGHT VARIETIES
# OF
# Spheroidical CASKS lying,

Calculated to every

Thouſandth Part of the Bung Diameter.

IN the firſt Column of this Table the Depths or Heights of the Segments are expreſſed in thouſandth Parts of the Bung Diameter, the Explanation of it, in other reſpects, being the ſame as that given for the Table of Segments for Standing Casks, page 45. Therefore when you are to compute the Ullage of any Spheroidical Cask lying (having firſt determined the Variety of the Cask, by dividing the Head Diameter by the Bung Diameter, and comparing the Quotient with the Numbers placed at the Top of the Table), divide the wet Inches by the Bung Diameter, and the Quotient thence ariſing will be the tabular Height, againſt which, in the Column proper to the Variety of the Cask, you will have the Segment, which being multiplied into the Content of the Cask, will give the Content of the Ullage. The Examples which follow the Table will make this plain.

## Spheroids lying.

| Height of the Segment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
|---|---|---|---|---|---|---|---|---|
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | ,85<br>,86<br>,87<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 1 | .0000 | .0000 | .0000 | .0000 | .0000 | .0000 | .0001 | .0001 |
| 2 | .0001 | .0001 | .0001 | .0001 | .0001 | .0001 | .0001 | .0001 |
| 3 | .0001 | .0001 | .0001 | .0001 | .0001 | .0001 | .0002 | .0002 |
| 4 | .0001 | .0001 | .0001 | .0001 | .0001 | .0001 | .0002 | .0002 |
| 5 | .0002 | .0002 | .0002 | .0002 | .0002 | .0002 | .0003 | .0003 |
| 6 | .0002 | .0002 | .0002 | .0002 | .0002 | .0002 | .0003 | .0004 |
| 7 | .0002 | .0002 | .0003 | .0003 | .0003 | .0003 | .0004 | .0004 |
| 8 | .0002 | .0002 | .0003 | .0003 | .0003 | .0003 | .0004 | .0005 |
| 9 | .0003 | .0003 | .0003 | .0003 | .0003 | .0003 | .0005 | .0005 |
| 10 | .0003 | .0003 | .0004 | .0004 | .0004 | .0004 | .0005 | .0006 |
| 11 | .0004 | .0004 | .0005 | .0005 | .0005 | .0005 | .0007 | .0008 |
| 12 | .0005 | .0005 | .0006 | .0006 | .0006 | .0007 | .0008 | .0010 |
| 13 | .0006 | .0006 | .0007 | .0007 | .0008 | .0008 | .0010 | .0012 |
| 14 | .0007 | .0007 | .0008 | .0008 | .0009 | .0009 | .0011 | .0014 |
| 15 | .0008 | .0008 | .0009 | .0010 | .0010 | .0011 | .0013 | .0016 |
| 16 | .0009 | .0009 | .0010 | .0011 | .0011 | .0012 | .0014 | .0018 |
| 17 | .0010 | .0010 | .0011 | .0012 | .0012 | .0013 | .0016 | .0020 |
| 18 | .0011 | .0011 | .0012 | .0013 | .0014 | .0014 | .0017 | .0022 |
| 19 | .0012 | .0012 | .0013 | .0014 | .0015 | .0016 | .0019 | .0024 |
| 20 | .0013 | .0013 | .0014 | .0015 | .0016 | .0017 | .0020 | .0026 |
| 21 | .0014 | .0014 | .0015 | .0016 | .0017 | .0019 | .0022 | .0029 |
| 22 | .0015 | .0015 | .0016 | .0017 | .0019 | .0020 | .0023 | .0032 |
| 23 | .0016 | .0016 | .0017 | .0019 | .0020 | .0022 | .0025 | .0036 |
| 24 | .0017 | .0017 | .0018 | .0020 | .0021 | .0023 | .0027 | .0039 |
| 25 | .0019 | .0019 | .0020 | .0021 | .0023 | .0025 | .0029 | .0042 |
| 26 | .0020 | .0020 | .0021 | .0022 | .0024 | .0026 | .0030 | .0045 |
| 27 | .0021 | .0021 | .0022 | .0023 | .0025 | .0028 | .0032 | .0048 |
| 28 | .0022 | .0022 | .0023 | .0025 | .0026 | .0029 | .0034 | .0052 |
| 29 | .0023 | .0023 | .0024 | .0026 | .0028 | .0031 | .0035 | .0055 |
| 30 | .0024 | .0024 | .0025 | .0027 | .0029 | .0032 | .0037 | .0058 |

## Spheroids lying.

| Height of the Segment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
|---|---|---|---|---|---|---|---|---|
|  | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | ,85<br>,86<br>,87<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
|  | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 31 | .0027 | .0027 | .0028 | .0030 | .0032 | .0036 | .0041 | .0062 |
| 32 | .0029 | .0030 | .0031 | .0033 | .0036 | .0039 | .0046 | .0066 |
| 33 | .0032 | .0033 | .0034 | .0036 | .0039 | .0043 | .0050 | .0071 |
| 34 | .0035 | .0036 | .0037 | .0039 | .0042 | .0047 | .0054 | .0075 |
| 35 | .0038 | .0039 | .0040 | .0043 | .0046 | .0051 | .0059 | .0079 |
| 36 | .0040 | .0041 | .0043 | .0046 | .0049 | .0054 | .0063 | .0083 |
| 37 | .0043 | .0044 | .0046 | .0049 | .0052 | .0058 | .0067 | .0087 |
| 38 | .0046 | .0047 | .0049 | .0052 | .0055 | .0062 | .0071 | .0092 |
| 39 | .0048 | .0050 | .0052 | .0055 | .0059 | .0065 | .0076 | .0096 |
| 40 | .0051 | .0053 | .0055 | .0058 | 0062 | .0069 | .0080 | .0100 |
| 41 | .0054 | .0056 | .0058 | .0061 | .0066 | .0073 | .0084 | .0105 |
| 42 | .0057 | .0059 | .0061 | .0064 | .0069 | .0077 | .0088 | .0110 |
| 43 | .0060 | .0062 | .0064 | .0068 | .0073 | .0080 | .0092 | .0115 |
| 44 | .0063 | .0065 | .0067 | .0071 | .0076 | .0084 | .0096 | .0120 |
| 45 | .0066 | .0068 | .0070 | .0074 | .0080 | .0088 | .0100 | .0125 |
| 46 | .0068 | .0070 | .0073 | .0077 | .0083 | .0092 | .0104 | .0129 |
| 47 | .0071 | .0073 | .0076 | .0080 | .0087 | .0096 | .0108 | .0134 |
| 48 | .0074 | .0076 | .0079 | .0084 | .0090 | .0099 | .0112 | .0139 |
| 49 | .0077 | .0079 | .0082 | .0087 | .0094 | .0103 | .0116 | .0144 |
| 50 | .0080 | .0082 | .0085 | .0090 | .0097 | .0107 | .0120 | .0149 |
| 51 | .0083 | .0086 | .0089 | .0094 | .0101 | .0112 | .0124 | .0155 |
| 52 | .0087 | .0089 | .0092 | .0098 | .0105 | .0116 | .0128 | .0160 |
| 53 | .0090 | .0093 | .0096 | .0101 | .0109 | .0121 | .0133 | .0166 |
| 54 | .0094 | .0096 | 0100 | .0105 | .0113 | .0125 | .0137 | .0171 |
| 55 | .0097 | .0100 | .0104 | .0109 | .0118 | .0130 | .0141 | .0177 |
| 56 | .0100 | .0104 | .0107 | .0113 | .0122 | .0135 | .0145 | .0182 |
| 57 | .0104 | .0107 | .0111 | .0117 | .0126 | .0139 | .0149 | .0188 |
| 58 | .0107 | .0111 | .0115 | .0120 | .0130 | .0144 | .0154 | .0193 |
| 59 | .0111 | .0114 | .0118 | .0124 | .0134 | .0148 | .0158 | .0199 |
| 60 | .0114 | .0118 | .0122 | .0128 | .0138 | .0153 | .0162 | .0204 |

| Spheroids lying. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Height of the Segment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | ,85<br>,86<br>,87<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 61 | .0118 | .0122 | .0126 | .0133 | .0143 | .0157 | .0168 | .0210 |
| 62 | .0122 | .0126 | .0131 | .0137 | .0148 | .0162 | .0173 | .0216 |
| 63 | .0126 | .0130 | .0135 | .0142 | .0153 | .0166 | .0179 | .0222 |
| 64 | .0130 | .0134 | .0139 | .0146 | .0158 | .0171 | .0185 | .0228 |
| 65 | .0134 | .0139 | .0144 | .0151 | .0163 | .0175 | .0191 | .0235 |
| 66 | .0138 | .0143 | .0148 | .0156 | .0167 | .0179 | .0196 | .0241 |
| 67 | .0142 | .0147 | .0152 | .0160 | .0172 | .0184 | .0202 | .0247 |
| 68 | .0146 | .0151 | .0156 | .0165 | .0177 | .0188 | .0208 | .0253 |
| 69 | .0150 | .0155 | .0161 | .0169 | .0182 | .0193 | .0213 | .0259 |
| 70 | .0154 | .0159 | .0165 | .0174 | .0187 | .0197 | .0219 | .0265 |
| 71 | .0159 | .0164 | .0170 | .0179 | .0193 | .0202 | .0225 | .0272 |
| 72 | .0163 | .0168 | .0175 | .0184 | .0198 | .0207 | .0232 | .0278 |
| 73 | .0168 | .0173 | .0180 | .0190 | .0204 | .0212 | .0238 | .0285 |
| 74 | .0172 | .0178 | .0185 | .0195 | .0209 | .0217 | .0244 | .0291 |
| 75 | .0177 | .0183 | .0190 | .0200 | .0215 | .0223 | .0251 | .0298 |
| 76 | .0182 | .0187 | .0194 | .0205 | .0220 | .0228 | .0257 | .0304 |
| 77 | .0186 | .0192 | .0199 | .0210 | .0226 | .0233 | .0263 | .0311 |
| 78 | .0191 | .0197 | .0204 | .0216 | .0231 | .0238 | .0269 | .0317 |
| 79 | .0195 | .0201 | .0209 | .0221 | .0237 | .0243 | .0276 | .0324 |
| 80 | .0200 | .0206 | .0214 | .0226 | .0242 | .0248 | .0282 | .0330 |
| 81 | .0205 | .0211 | .0220 | .0232 | .0248 | .0256 | .0289 | .0337 |
| 82 | .0210 | .0217 | .0225 | .0238 | .0253 | .0263 | .0296 | .0344 |
| 83 | .0215 | .0222 | .0231 | .0243 | .0259 | .0271 | .0302 | .0351 |
| 84 | .0220 | .0227 | .0236 | .0249 | .0265 | .0279 | .0307 | .0358 |
| 85 | .0226 | .0233 | .0242 | .0255 | .0271 | .0287 | .0316 | .0365 |
| 86 | .0231 | .0238 | .0247 | .0261 | .0276 | .0294 | .0323 | .0372 |
| 87 | .0236 | .0243 | .0253 | .0267 | .0282 | .0302 | .0330 | .0379 |
| 88 | .0241 | .0248 | .0258 | .0272 | .0288 | .0310 | .0336 | .0386 |
| 89 | .0246 | .0254 | .0264 | .0278 | .0293 | .0317 | .0343 | .0393 |
| 90 | .0251 | .0259 | .0269 | .0284 | .0299 | .0325 | .0350 | .0400 |

Spheroids lying.

| Height of the Segment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
|---|---|---|---|---|---|---|---|---|
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | 85,<br>86,<br>87,<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 91 | .0257 | .0265 | .0275 | .0290 | .0304 | .0332 | .0357 | .0407 |
| 92 | .0262 | .0271 | .0281 | .0297 | .0309 | .0339 | .0364 | .0415 |
| 93 | .0268 | .0277 | .0287 | .0303 | .0314 | .0347 | .0372 | .0422 |
| 94 | .0274 | .0283 | .0293 | .0310 | .0319 | .0354 | .0379 | .0429 |
| 95 | .0279 | .0289 | .0300 | .0316 | .0324 | .0361 | .0386 | .0437 |
| 96 | .0285 | .0294 | .0306 | .0322 | .0329 | .0368 | .0393 | .0444 |
| 97 | .0291 | .0300 | .0312 | .0329 | .0334 | .0375 | .0400 | .0451 |
| 98 | .0297 | .0306 | .0318 | .0335 | .0339 | .0383 | .0408 | .0458 |
| 99 | .0302 | .0312 | .0324 | .0342 | .0344 | .0390 | .0415 | .0466 |
| 100 | .0308 | .0318 | .0330 | .0348 | .0349 | .0397 | .0422 | .0473 |
| 101 | .0314 | .0324 | .0337 | .0353 | .0356 | .0404 | .0430 | .0481 |
| 102 | .0320 | .0331 | .0343 | .0359 | .0364 | .0412 | .0437 | .0488 |
| 103 | .0327 | .0337 | .0350 | .0364 | .0371 | .0419 | .0445 | .0496 |
| 104 | .0333 | .0343 | .0357 | .0369 | .0379 | .0427 | .0452 | .0504 |
| 105 | .0339 | .0350 | .0364 | .0375 | .0386 | .0434 | .0460 | .0512 |
| 106 | .0345 | .0356 | .0370 | .0380 | .0393 | .0441 | .0468 | .0519 |
| 107 | .0351 | .0362 | .0377 | .0385 | .0401 | .0449 | .0475 | .0527 |
| 108 | .0358 | .0368 | .0384 | .0390 | .0408 | .0456 | .0483 | .0535 |
| 109 | .0364 | .0375 | .0390 | .0396 | .0416 | .0464 | .0490 | .0542 |
| 110 | .0370 | .0381 | .0397 | .0401 | .0423 | .0471 | .0498 | .0550 |
| 111 | .0377 | .0388 | .0404 | .0407 | .0432 | .0479 | .0506 | .0558 |
| 112 | .0383 | .0395 | .0411 | .0413 | .0440 | .0487 | .0514 | .0566 |
| 113 | .0390 | .0402 | .0419 | .0420 | .0449 | .0495 | .0522 | .0574 |
| 114 | .0397 | .0409 | .0426 | .0426 | .0458 | .0503 | .0530 | .0582 |
| 115 | .0404 | .0416 | .0433 | .0432 | .0467 | .0511 | .0538 | .0590 |
| 116 | .0410 | .0423 | .0440 | .0438 | .0475 | .0518 | .0545 | .0598 |
| 117 | .0417 | .0430 | .0447 | .0444 | .0484 | .0526 | .0553 | .0606 |
| 118 | .0424 | .0437 | .0455 | .0451 | .0493 | .0534 | .0561 | .0614 |
| 119 | .0430 | .0444 | .0462 | .0457 | .0501 | .0542 | .0569 | .0622 |
| 120 | .0437 | .0451 | .0469 | .0463 | .0510 | .0550 | .0577 | .0630 |

Spheroids lying.

| Height of the Segment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
|---|---|---|---|---|---|---|---|---|
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | ,85<br>,86<br>,87<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 121 | .0444 | .0458 | .0476 | .0474 | .0520 | .0560 | .0588 | .0639 |
| 122 | .0451 | .0466 | .0484 | .0486 | .0530 | .0569 | .0598 | .0648 |
| 123 | .0459 | .0473 | .0491 | .0497 | .0540 | .0579 | .0609 | .0657 |
| 124 | .0466 | .0481 | .0499 | .0509 | .0550 | .0589 | .0619 | .0666 |
| 125 | .0473 | .0488 | .0506 | .0520 | .0561 | .0599 | .0630 | .0675 |
| 126 | .0480 | .0495 | .0513 | .0531 | .0571 | .0608 | .0640 | .0683 |
| 127 | .0487 | .0503 | .0521 | .0543 | .0581 | .0618 | .0651 | .0692 |
| 128 | .0495 | .0510 | .0528 | .0554 | .0591 | .0628 | .0661 | .0701 |
| 129 | .0502 | .0518 | .0536 | .0566 | .0601 | .0637 | .0672 | .0710 |
| 130 | .0509 | .0525 | .0543 | .0577 | .0611 | .0647 | .0682 | .0719 |
| 131 | .0517 | .0533 | .0551 | .0585 | .0619 | .0656 | .0691 | .0728 |
| 132 | .0524 | .0541 | .0559 | .0593 | .0628 | .0665 | .0699 | .0736 |
| 133 | .0532 | .0549 | .0568 | .0602 | .0636 | .0673 | .0708 | .0745 |
| 134 | .0540 | .0557 | .0576 | .0610 | .0645 | .0682 | .0716 | .0753 |
| 135 | .0547 | .0565 | .0584 | .0618 | .0653 | .0691 | .0725 | .0762 |
| 136 | .0554 | .0573 | .0592 | .0626 | .0661 | .0700 | .0733 | .0771 |
| 137 | .0563 | .0581 | .0601 | .0634 | .0670 | .0709 | .0742 | .0779 |
| 138 | .0571 | .0589 | .0609 | .0643 | .0678 | .0717 | .0750 | .0788 |
| 139 | .0578 | .0597 | .0617 | .0651 | .0687 | .0726 | .0759 | .0796 |
| 140 | .0586 | .0605 | .0626 | .0659 | .0695 | .0735 | .0767 | .0805 |
| 141 | .0594 | .0612 | .0634 | .0668 | .0704 | .0743 | .0776 | .0814 |
| 142 | .0602 | .0619 | .0643 | .0676 | .0712 | .0752 | .0785 | .0823 |
| 143 | .0611 | .0627 | .0652 | .0685 | .0721 | .0760 | .0793 | .0832 |
| 144 | .0619 | .0634 | .0661 | .0694 | .0729 | .0768 | .0802 | .0841 |
| 145 | .0627 | .0641 | .0669 | .0703 | .0738 | .0777 | .0811 | .0850 |
| 146 | .0635 | .0648 | .0678 | .0711 | .0747 | .0785 | .0820 | .0858 |
| 147 | .0643 | .0655 | .0687 | .0720 | .0755 | .0793 | .0829 | .0867 |
| 148 | .0652 | .0663 | .0695 | .0729 | .0764 | .0801 | .0837 | .0876 |
| 149 | .0660 | .0670 | .0704 | .0737 | .0772 | .0810 | .0846 | .0885 |
| 150 | .0668 | .0677 | .0713 | .0746 | .0781 | .0818 | .0856 | .0894 |

Spheroids lying.

| Height of the Segment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
|---|---|---|---|---|---|---|---|---|
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | ,85<br>,86<br>,87<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95<br>,96 |
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 151 | .0677 | .0686 | .0722 | .0755 | .0790 | .0827 | .0865 | .0903 |
| 152 | .0685 | .0696 | .0731 | .0764 | .0799 | .0836 | .0874 | .0913 |
| 153 | .0694 | .0705 | .0740 | .0773 | .0809 | .0846 | .0883 | .0922 |
| 154 | .0703 | .0714 | .0749 | .0782 | .0818 | .0855 | .0892 | .0931 |
| 155 | .0711 | .0724 | .0758 | .0792 | .0827 | .0864 | .0902 | .0941 |
| 156 | .0720 | .0733 | .0767 | .0801 | .0836 | .0873 | .0911 | .0950 |
| 157 | .0729 | .0742 | .0776 | .0810 | .0845 | .0882 | .0920 | .0959 |
| 158 | .0738 | .0751 | .0785 | .0819 | .0855 | .0892 | .0929 | .0968 |
| 159 | .0746 | .0761 | .0794 | .0828 | .0864 | .0901 | .0938 | .0978 |
| 160 | .0755 | .0770 | .0803 | .0837 | .0873 | .0910 | .0947 | .0987 |
| 161 | .0763 | .0779 | .0813 | .0847 | .0883 | .0919 | .0957 | .0996 |
| 162 | .0770 | .0789 | .0822 | .0856 | .0892 | .0929 | .0966 | .1006 |
| 163 | .0778 | .0798 | .0831 | .0866 | .0902 | .0938 | .0976 | .1015 |
| 164 | .0786 | .0808 | .0841 | .0875 | .0911 | .0948 | .0985 | .1025 |
| 165 | .0793 | .0817 | .0850 | .0885 | .0921 | .0957 | .0995 | .1034 |
| 166 | .0801 | .0826 | .0860 | .0894 | .0930 | .0966 | .1004 | .1043 |
| 167 | .0809 | .0836 | .0869 | .0904 | .0940 | .0976 | .1014 | .1053 |
| 168 | .0817 | .0845 | .0878 | .0913 | .0949 | .0985 | .1023 | .1062 |
| 169 | .0825 | .0855 | .0888 | .0923 | .0959 | .0995 | .1033 | .1072 |
| 170 | .0832 | .0864 | .0897 | .0932 | .0968 | .1004 | .1042 | .1081 |
| 171 | .0841 | .0873 | .0907 | .0941 | .0977 | .1014 | .1052 | .1091 |
| 172 | .0851 | .0883 | .0916 | .0951 | .0987 | .1023 | .1061 | .1100 |
| 173 | .0860 | .0892 | .0926 | .0960 | .0996 | .1033 | .1071 | .1110 |
| 174 | .0870 | .0902 | .0936 | .0970 | .1006 | .1042 | .1080 | .1119 |
| 175 | .0879 | .0911 | .0945 | .0979 | .1015 | .1052 | .1090 | .1129 |
| 176 | .0888 | .0920 | .0955 | .0988 | .1024 | .1061 | .1100 | .1139 |
| 177 | .0898 | .0930 | .0964 | .0998 | .1034 | .1071 | .1109 | .1148 |
| 178 | .0907 | .0939 | .0974 | .1007 | .1043 | .1080 | .1119 | .1158 |
| 179 | .0917 | .0949 | .0984 | .1017 | .1053 | .1090 | .1128 | .1167 |
| 180 | .0926 | .0958 | .0993 | .1026 | .1062 | .1099 | .1138 | .1177 |

Spheroids lying.

| Height of the Segment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
|---|---|---|---|---|---|---|---|---|
|  | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | ,85<br>,86<br>,87<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
|  | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 181 | .0936 | .0968 | .1003 | .1036 | .1072 | .1109 | .1148 | .1187 |
| 182 | .0946 | .0978 | .1013 | .1046 | .1082 | .1119 | .1158 | .1197 |
| 183 | .0956 | .0989 | .1024 | .1056 | .1092 | .1129 | .1168 | .1207 |
| 184 | .0966 | .0999 | .1034 | .1066 | .1102 | .1139 | .1178 | .1217 |
| 185 | .0977 | .1009 | .1044 | .1077 | .1113 | .1150 | .1188 | .1227 |
| 186 | .0987 | .1019 | .1054 | .1087 | .1123 | .1160 | .1198 | .1237 |
| 187 | .0997 | .1029 | .1064 | .1097 | .1133 | .1170 | .1208 | .1247 |
| 188 | .1007 | .1040 | .1074 | .1107 | .1143 | .1180 | .1218 | .1257 |
| 189 | .1017 | .1050 | .1084 | .1117 | .1153 | .1190 | .1228 | .1267 |
| 190 | .1027 | .1060 | .1094 | .1127 | .1163 | .1200 | .1238 | .1277 |
| 191 | .1037 | .1070 | .1104 | .1137 | .1173 | .1210 | .1248 | .1287 |
| 192 | .1047 | .1081 | .1114 | .1148 | .1183 | .1220 | .1258 | .1297 |
| 193 | .1058 | .1091 | .1124 | .1158 | .1194 | .1230 | .1268 | .1307 |
| 194 | .1068 | .1101 | .1135 | .1168 | .1204 | .1240 | .1278 | .1317 |
| 195 | .1078 | .1112 | .1145 | .1179 | .1214 | .1251 | .1289 | .1328 |
| 196 | .1088 | .1122 | .1155 | .1189 | .1224 | .1261 | .1299 | .1338 |
| 197 | .1098 | .1132 | .1165 | .1199 | .1234 | .1271 | .1309 | .1348 |
| 198 | .1109 | .1142 | .1176 | .1209 | .1245 | .1281 | .1319 | .1358 |
| 199 | .1119 | .1153 | .1186 | .1220 | .1255 | .1291 | .1329 | .1368 |
| 200 | .1129 | .1163 | .1196 | .1230 | .1265 | .1301 | .1339 | .1378 |
| 201 | .1140 | .1174 | .1207 | .1241 | .1276 | .1312 | .1349 | .1388 |
| 202 | .1151 | .1184 | .1217 | .1251 | .1286 | .1322 | .1360 | .1398 |
| 203 | .1162 | .1195 | .1228 | .1262 | .1297 | .1333 | .1370 | .1409 |
| 204 | .1173 | .1206 | .1239 | .1272 | .1307 | .1343 | .1381 | .1419 |
| 205 | .1184 | .1217 | .1249 | .1283 | .1318 | .1354 | .1391 | .1429 |
| 206 | .1194 | .1227 | .1260 | .1294 | .1329 | .1364 | .1401 | .1439 |
| 207 | .1205 | .1238 | .1270 | .1304 | .1339 | .1375 | .1412 | .1449 |
| 208 | .1216 | .1249 | .1281 | .1315 | .1350 | .1385 | .1422 | .1460 |
| 209 | .1227 | .1259 | .1292 | .1325 | .1360 | .1396 | .1433 | .1470 |
| 210 | .1238 | .1270 | .1302 | .1336 | .1371 | .1406 | .1443 | .1480 |

Spheroids lying.

| Height of the Segment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
|---|---|---|---|---|---|---|---|---|
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | 85,<br>86,<br>87,<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
| | Seg | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 211 | .1249 | .1281 | .1313 | .1347 | .1382 | .1417 | .1454 | .1491 |
| 212 | .1259 | .1292 | .1324 | .1357 | .1392 | .1427 | .1464 | .1501 |
| 213 | .1270 | .1302 | .1334 | .1368 | .1403 | .1438 | .1475 | .1512 |
| 214 | .1281 | .1313 | .1345 | 1379 | .1413 | .1448 | .1485 | .1523 |
| 215 | .1292 | .1324 | .1356 | .1390 | .1424 | .1459 | .1496 | .1534 |
| 216 | .1302 | .1335 | .1366 | .1400 | .1435 | .1470 | .1507 | .1544 |
| 217 | .1313 | .1346 | .1377 | .1411 | .1445 | .1480 | .1517 | .1555 |
| 21 | .1324 | .1356 | .1388 | .1422 | .1456 | .1491 | .1528 | .1566 |
| 219 | .1334 | .1367 | .1398 | .1432 | .1466 | .1501 | .1538 | .1576 |
| 220 | .1345 | .1378 | .1409 | .1443 | .1477 | .1512 | .1549 | .1587 |
| 221 | .1356 | .1389 | .1420 | .1454 | .1488 | .1523 | .1560 | .1598 |
| 222 | .1366 | .1399 | .1430 | .1464 | .1498 | .1533 | .1570 | .1608 |
| 223 | .1377 | .1410 | .1441 | .1475 | .1509 | .1544 | .1581 | .1619 |
| 224 | .1387 | .1420 | .1451 | .1485 | .1519 | .1554 | .1592 | .1629 |
| 225 | .1398 | .1431 | .1462 | .1496 | .1530 | .1565 | .1603 | .1640 |
| 226 | .1409 | .1442 | .1473 | .1506 | .1541 | .1576 | .1613 | .1651 |
| 227 | .1419 | .1452 | .1483 | .1517 | .1551 | .1586 | .1624 | .1661 |
| 228 | .1430 | .1463 | .1494 | .1527 | .1562 | .1597 | .1635 | .1672 |
| 229 | .1440 | .1473 | .1505 | .1538 | .1572 | .1607 | .1645 | .1682 |
| 230 | .1451 | .1484 | .1515 | .1548 | .1583 | .1618 | .1656 | .1693 |
| 231 | .1463 | .1496 | .1527 | .1560 | .1594 | .1629 | .1667 | .1704 |
| 232 | .1475 | .1507 | .1538 | .1571 | .1606 | .1641 | .1678 | .1715 |
| 233 | .1486 | .1519 | .1550 | .1583 | .1617 | .1652 | .1689 | .1726 |
| 234 | .1498 | .1530 | .1561 | .1594 | .1629 | .1663 | .1700 | .1737 |
| 235 | .1510 | .1542 | .1573 | .1606 | .1640 | .1675 | .1712 | .1748 |
| 236 | .1522 | .1554 | .1585 | .1618 | .1651 | .1686 | .1723 | .1758 |
| 237 | .1534 | .1565 | .1596 | .1629 | .1663 | .1697 | .1734 | .1769 |
| 238 | .1545 | .1577 | .1608 | .1641 | .1674 | .1708 | .1745 | .1780 |
| 239 | .1557 | .1588 | .1619 | .1652 | .1686 | .1720 | .1756 | .1791 |
| 240 | .1569 | .1600 | .1631 | .1664 | .1697 | .1731 | .1767 | .1802 |

| Spheroids lying. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Height of the Segment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | ,85<br>,86<br>,87<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 241 | .1581 | .1612 | .1642 | .1675 | .1708 | .1742 | .1778 | .1813 |
| 242 | .1592 | .1623 | .1654 | .1687 | .1720 | .1753 | .1789 | .1824 |
| 243 | .1604 | .1635 | .1665 | .1698 | .1731 | .1765 | .1800 | .1835 |
| 244 | .1616 | .1646 | .1676 | .1709 | .1743 | .1776 | .1811 | .1846 |
| 245 | .1628 | .1658 | .1688 | .1721 | .1754 | .1787 | .1822 | .1858 |
| 246 | .1639 | .1669 | .1699 | .1732 | .1765 | .1798 | .1833 | .1869 |
| 247 | .1651 | .1681 | .1711 | .1743 | .1777 | .1809 | .1844 | .1880 |
| 248 | .1663 | .1692 | .1722 | .1754 | .1788 | .1821 | .1855 | .1891 |
| 249 | .1674 | .1704 | .1733 | .1766 | .1800 | .1832 | .1866 | .1902 |
| 250 | .1686 | .1715 | .1745 | .1777 | .1811 | .1843 | .1877 | .1913 |
| 251 | .1699 | .1727 | .1757 | .1788 | .1822 | .1853 | .1887 | .1923 |
| 252 | .1712 | .1740 | .1768 | .1799 | .1832 | .1864 | .1898 | .1934 |
| 253 | .1726 | .1752 | .1780 | .1810 | .1843 | .1874 | .1908 | .1944 |
| 254 | .1739 | .1765 | .1791 | .1821 | .1853 | .1885 | .1918 | .1954 |
| 255 | .1752 | .1777 | .1803 | .1833 | .1864 | .1895 | .1929 | .1965 |
| 256 | .1765 | .1789 | .1815 | .1844 | .1874 | .1905 | .1939 | .1975 |
| 257 | .1778 | .1802 | .1826 | .1855 | .1885 | .1916 | .1949 | .1985 |
| 258 | .1792 | .1814 | .1838 | .1866 | .1895 | .1926 | .1959 | .1995 |
| 259 | .1805 | .1827 | .1849 | .1877 | .1905 | .1937 | .1970 | .2006 |
| 260 | .1818 | .1839 | .1861 | .1888 | .1916 | .1947 | .1980 | .2016 |
| 261 | .1830 | .1851 | .1873 | .1900 | .1928 | .1959 | .1992 | .2027 |
| 262 | .1842 | .1862 | .1885 | .1911 | .1939 | .1970 | .2003 | .2039 |
| 263 | .1853 | .1874 | .1896 | .1923 | .1951 | .1982 | .2015 | .2050 |
| 264 | .1865 | .1886 | .1908 | .1935 | .1963 | .1994 | .2026 | .2062 |
| 265 | .1877 | .1898 | .1920 | .1947 | .1975 | .2006 | .2038 | .2073 |
| 266 | .1889 | .1909 | .1932 | .1958 | .1986 | .2017 | .2049 | .2084 |
| 267 | .1901 | .1921 | .1944 | .1970 | .1998 | .2029 | .2061 | .2096 |
| 268 | .1912 | .1933 | .1955 | .1982 | .2010 | .2041 | .2072 | .2107 |
| 269 | .1924 | .1944 | .1967 | .1993 | .2021 | .2052 | .2084 | .2119 |
| 270 | .1936 | .1956 | .1979 | .2005 | .2033 | .2064 | .2095 | .2130 |

Spheroids lying.

| Height of the Segment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
|---|---|---|---|---|---|---|---|---|
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | ,85<br>,86<br>,87<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 271 | .1948 | .1968 | .1991 | .2017 | .2045 | .2076 | .2107 | .2142 |
| 272 | .1960 | .1980 | .2003 | .2029 | .2057 | .2088 | .2119 | .2153 |
| 273 | .1972 | .1992 | .2015 | .2041 | .2068 | .2099 | .2130 | .2165 |
| 274 | .1984 | .2004 | .2027 | .2053 | .2080 | .2111 | .2142 | .2176 |
| 275 | .1996 | .2017 | .2039 | .2065 | .2092 | .2123 | .2154 | .2188 |
| 276 | .2008 | .2029 | .2051 | .2077 | .2104 | .2135 | .2166 | .2200 |
| 277 | .2020 | .2041 | .2063 | .2089 | .2116 | .2147 | .2178 | .2211 |
| 278 | .2032 | .2053 | .2075 | .2101 | .2128 | .2158 | .2189 | .2223 |
| 279 | .2044 | .2065 | .2087 | .2113 | .2140 | .2170 | .2201 | .2234 |
| 280 | .2056 | .2077 | .2099 | .2125 | .2152 | .2182 | .2213 | .2246 |
| 281 | .2069 | .2089 | .2111 | .2137 | .2164 | .2194 | .2225 | .2258 |
| 282 | .2081 | .2102 | .2123 | .2149 | .2176 | .2206 | .2237 | .2269 |
| 283 | .2094 | .2114 | .2135 | .2161 | .2188 | .2218 | .2249 | .2281 |
| 284 | .2106 | .2126 | .2147 | .2173 | .2200 | .2230 | .2261 | .2293 |
| 285 | .2119 | .2139 | .2159 | .2184 | .2213 | .2242 | .2273 | .2305 |
| 286 | .2131 | .2151 | .2171 | .2196 | .2225 | .2254 | .2284 | .2316 |
| 287 | .2144 | .2163 | .2184 | .2208 | .2237 | .2266 | .2296 | .2328 |
| 288 | .2156 | .2175 | .2196 | .2220 | .2249 | .2278 | .2308 | .2340 |
| 289 | .2169 | .2188 | .2208 | .2232 | .2261 | .2290 | .2320 | .2351 |
| 290 | .2181 | .2200 | .2220 | .2244 | .2273 | .2302 | .2332 | .2363 |
| 291 | .2193 | .2212 | .2232 | .2256 | .2285 | .2314 | .2344 | .2375 |
| 292 | .2205 | .2224 | .2244 | .2269 | .2297 | .2326 | .2356 | .2387 |
| 293 | .2217 | .2236 | .2257 | .2281 | .2310 | .2338 | .2368 | .2399 |
| 294 | .2229 | .2248 | .2269 | .2294 | .2322 | .2350 | .2380 | .2411 |
| 295 | .2242 | .2261 | .2281 | .2306 | .2334 | .2362 | .2392 | .2422 |
| 296 | .2254 | .2273 | .2294 | .2318 | .2346 | .2375 | .2404 | .2434 |
| 297 | .2266 | .2285 | .2306 | .2331 | .2358 | .2387 | .2416 | .2446 |
| 298 | .2278 | .2297 | .2318 | .2343 | .2371 | .2399 | .2428 | .2458 |
| 299 | .2290 | .2309 | .2331 | .2356 | .2383 | .2411 | .2440 | .2470 |
| 300 | .2302 | .2321 | .2343 | .2368 | .2395 | .2423 | .2452 | .2482 |

Spheroids lying.

| Height of the Seg-ment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
|---|---|---|---|---|---|---|---|---|
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | ,85<br>,86<br>,87<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 301 | .2315 | .2333 | .2355 | .2380 | .2407 | .2435 | .2464 | .2494 |
| 302 | .2327 | .2346 | .2368 | .2392 | .2419 | .2447 | .2476 | .2506 |
| 303 | .2340 | .2358 | .2380 | .2405 | .2431 | .2459 | .2488 | .2518 |
| 304 | .2352 | .2371 | .2392 | .2417 | .2443 | .2471 | .2500 | .2530 |
| 305 | .2365 | .2383 | .2405 | .2429 | .2455 | .2483 | .2512 | .2542 |
| 306 | .2377 | .2395 | .2417 | .2441 | .2467 | .2495 | .2523 | .2553 |
| 307 | .2390 | .2408 | .2430 | 2453 | .2479 | .2507 | .2535 | .2565 |
| 308 | .2402 | .2420 | .2442 | .2466 | .2491 | .2519 | .2547 | .2577 |
| 309 | .2415 | .2433 | .2455 | .2478 | .2503 | .2531 | .2559 | .2589 |
| 310 | .2427 | .2445 | .2467 | .2490 | .2515 | .2543 | .2571 | .2601 |
| 311 | .2440 | .2458 | .2480 | .2503 | .2528 | .2555 | .2583 | .2613 |
| 312 | .2453 | .2471 | .2492 | .2515 | .2540 | .2568 | .2595 | .2625 |
| 313 | .2465 | .2483 | .2505 | .2528 | .2553 | .2580 | .2608 | .2637 |
| 314 | .2478 | .2496 | .2517 | .2540 | .2565 | .2592 | .2620 | .2649 |
| 315 | .2491 | .2509 | .2530 | .2553 | .2578 | .2605 | .2632 | .2661 |
| 316 | .2504 | .2522 | .2542 | .2566 | .2590 | .2617 | .2644 | .2673 |
| 317 | .2517 | .2535 | .2555 | .2578 | .2603 | .2629 | .2656 | .2685 |
| 318 | .2529 | .2547 | .2568 | .2591 | .2615 | .2641 | .2669 | .2697 |
| 319 | .2542 | .2560 | .2580 | .2603 | .2628 | 2654 | .2681 | .2709 |
| 320 | .2555 | .2573 | .2593 | .2616 | .2640 | .2666 | .2693 | .2721 |
| 321 | .2568 | .2586 | .2606 | .2629 | .2653 | .2678 | .2705 | .2733 |
| 322 | .2581 | .2599 | .2618 | .2641 | .2665 | .2691 | .2718 | .2745 |
| 323 | .2594 | .2611 | .2631 | .2654 | .2678 | .2703 | .2730 | .2758 |
| 324 | .2607 | .2624 | .2644 | .2666 | .2690 | .2716 | .2742 | .2770 |
| 325 | .2620 | .2637 | .2657 | .2679 | .2703 | .2728 | .2755 | .2782 |
| 326 | .2632 | .2650 | .2669 | .2692 | .2715 | .2740 | .2767 | .2794 |
| 327 | .2645 | .2663 | .2682 | .2704 | .2728 | .2753 | .2779 | .2806 |
| 328 | .2658 | .2675 | .2695 | .2717 | .2740 | .2765 | .2791 | .2819 |
| 329 | .2671 | .2688 | .2708 | .2729 | .2753 | .2778 | .2804 | .2831 |
| 330 | .2684 | .2701 | .2720 | .2742 | .2765 | 2790 | .2816 | .2843 |

Spheroids lying.

| Height of the Seg-ment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
|---|---|---|---|---|---|---|---|---|
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | ,85<br>,86<br>,87<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 331 | .2697 | .2714 | .2733 | .2755 | .2778 | .2803 | .2828 | .2855 |
| 332 | .2710 | .2727 | .2746 | .2767 | .2790 | .2815 | .2841 | .2867 |
| 333 | .2723 | .2740 | .2759 | .2780 | .2803 | .2828 | .2853 | .2880 |
| 334 | .2736 | .2753 | .2771 | .2793 | .2816 | .2840 | .2865 | .2892 |
| 335 | .2749 | .2766 | .2784 | .2806 | .2829 | .2853 | .2878 | .2904 |
| 336 | .2762 | .2778 | .2797 | .2818 | .2841 | .2865 | .2890 | .2916 |
| 337 | .2775 | .2791 | .2810 | .2831 | .2854 | .2878 | .2902 | .2928 |
| 338 | .2788 | .2804 | .2822 | .2844 | .2867 | .2890 | .2914 | .2941 |
| 339 | .2801 | .2817 | .2835 | .2856 | .2879 | .2903 | .2927 | .2953 |
| 340 | .2814 | .2830 | .2848 | .2869 | .2892 | .2915 | .2939 | .2965 |
| 341 | .2827 | .2843 | .2861 | .2882 | .2905 | .2927 | .2951 | .2977 |
| 342 | .2840 | .2856 | .2872 | .2894 | .2917 | .2940 | .2964 | .2989 |
| 343 | .2853 | .2869 | .2887 | .2907 | .2930 | .2952 | .2976 | .3002 |
| 344 | .2866 | .2882 | .2900 | .2920 | .2942 | .2965 | .2989 | .3014 |
| 345 | .2879 | .2895 | .2913 | .2933 | .2955 | .2977 | .3001 | .3026 |
| 346 | .2892 | .2907 | .2926 | .2945 | .2967 | .2989 | .3013 | .3038 |
| 347 | .2905 | .2920 | .2938 | .2958 | .2980 | .3002 | .3026 | .3050 |
| 348 | .2918 | .2933 | .2951 | .2971 | .2992 | .3014 | .3038 | .3063 |
| 349 | .2931 | .2946 | .2964 | .2983 | .3005 | .3027 | .3051 | .3075 |
| 350 | .2944 | .2959 | .2977 | .2996 | .3017 | .3039 | .3063 | .3087 |
| 351 | .2957 | .2972 | .2990 | .3009 | .3030 | .3052 | .3075 | .3099 |
| 352 | .2970 | .2985 | .3003 | .3022 | .3042 | .3064 | .3088 | .3111 |
| 353 | .2983 | .2998 | .3016 | .3034 | .3055 | .3077 | .3100 | .3124 |
| 354 | .2996 | .3011 | .3029 | .3047 | .3067 | .3089 | .3112 | .3136 |
| 355 | .3010 | .3024 | .3042 | .3060 | .3080 | .3102 | .3125 | .3148 |
| 356 | .3023 | .3037 | .3055 | .3073 | .3093 | .3114 | .3137 | .3160 |
| 357 | .3036 | .3050 | .3068 | .3086 | .3105 | .3127 | .3149 | .3172 |
| 358 | .3049 | .3063 | .3081 | .3098 | .3118 | .3139 | .3161 | .3185 |
| 359 | .3062 | .3076 | .3094 | .3111 | .3130 | .3152 | .3174 | .3197 |
| 360 | .3075 | .3089 | .3107 | .3124 | .3143 | .3164 | .3186 | .3209 |

Spheroids lying.

| Heigh. of the Seg-ment. | 1 Var. | 2 Var | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
|---|---|---|---|---|---|---|---|---|
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | ,85<br>,86<br>,87<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95<br>,96 |
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 361 | .3088 | .3102 | .3120 | .3137 | .3156 | .3177 | .3199 | .3222 |
| 362 | .3102 | .3116 | .3133 | .3150 | .3169 | .3190 | .3211 | .3234 |
| 363 | .3115 | .3129 | .3146 | .3163 | .3182 | .3203 | .3224 | .3247 |
| 364 | .3129 | .3143 | .3159 | .3176 | .3195 | .3216 | .3237 | .3259 |
| 365 | .3142 | .3156 | .3173 | .3190 | .3208 | .3229 | .3250 | .3272 |
| 366 | .3155 | .3169 | .3186 | .3203 | .3221 | .3241 | .3262 | .3284 |
| 367 | .3169 | .3183 | .3199 | .3216 | .3234 | .3254 | .3275 | .3297 |
| 368 | .3182 | .3196 | .3212 | .3229 | .3247 | .3267 | .3288 | .3309 |
| 369 | .3196 | .3210 | .3225 | .3242 | .3260 | .3280 | .3300 | .3322 |
| 370 | .3209 | .3223 | .3238 | .3255 | .3273 | .3293 | .3313 | .3334 |
| 371 | .3223 | .3236 | .3251 | .3268 | .3286 | .3306 | .3326 | .3347 |
| 372 | .3236 | .3250 | .3265 | .3281 | .3299 | .3319 | .3339 | .3359 |
| 373 | .3250 | .3263 | .3278 | .3295 | .3312 | .3332 | .3351 | .3372 |
| 374 | .3263 | .3277 | .3291 | .3308 | .3325 | .3345 | .3364 | .3385 |
| 375 | .3277 | .3290 | .3305 | .3321 | .3339 | .3358 | .3377 | .3398 |
| 376 | .3290 | .3303 | .3318 | .3334 | .3352 | .3370 | .3390 | .3410 |
| 377 | .3304 | .3317 | .3331 | .3347 | .3365 | .3383 | .3403 | .3423 |
| 378 | .3317 | .3330 | .3344 | .3361 | .3378 | .3396 | .3415 | .3436 |
| 379 | .3331 | .3344 | .3358 | .3374 | .3391 | .3409 | .3428 | .3448 |
| 380 | .3344 | .3357 | .3371 | .3387 | .3404 | .3422 | .3441 | .3461 |
| 381 | .3358 | .3370 | .3384 | .3400 | .3417 | .3435 | .3454 | .3474 |
| 382 | .3371 | .3384 | .3397 | .3413 | .3430 | .3448 | .3467 | .3486 |
| 383 | .3385 | .3397 | .3411 | .3426 | .3443 | .3461 | .3479 | .3499 |
| 384 | .3398 | .3411 | .3424 | .3439 | .3456 | .3474 | .3492 | .3511 |
| 385 | .3412 | .3424 | .3437 | .3452 | .3469 | .3487 | .3505 | .3524 |
| 386 | .3425 | .3437 | .3451 | .3466 | .3482 | .3499 | .3518 | .3537 |
| 387 | .3439 | .3451 | .3464 | .3479 | .3495 | .3512 | .3531 | .3549 |
| 388 | .3452 | .3464 | .3477 | .3492 | .3508 | .3525 | .3543 | .3562 |
| 389 | .3466 | .3478 | .3491 | .3505 | .3521 | .3538 | .3556 | .3574 |
| 390 | .3479 | .3491 | .3504 | .3518 | .3534 | .3551 | .3569 | .3587 |

| Spheroids lying. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Height of the Segment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | ,85<br>,86<br>,87<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 391 | ·3493 | ·3504 | ·3517 | ·3531 | ·3547 | ·3564 | ·3582 | ·3600 |
| 392 | ·3506 | ·3518 | ·3531 | ·3545 | ·3560 | ·3577 | ·3595 | ·3612 |
| 393 | ·3520 | ·3531 | ·3544 | ·3558 | ·3574 | ·3590 | ·3607 | ·3625 |
| 394 | ·3533 | ·3545 | ·3557 | ·3571 | ·3587 | ·3603 | ·3620 | ·3638 |
| 395 | ·3547 | ·3558 | ·3571 | ·3585 | ·3600 | ·3616 | ·3633 | ·3651 |
| 396 | ·3560 | ·3571 | ·3584 | ·3598 | ·3613 | ·3629 | ·3646 | ·3663 |
| 397 | ·3574 | ·3585 | ·3597 | ·3611 | ·3626 | ·3642 | ·3659 | ·3676 |
| 398 | ·3587 | ·3598 | ·3611 | ·3624 | ·3640 | ·3655 | ·3671 | ·3689 |
| 399 | ·3601 | ·3612 | ·3624 | ·3638 | ·3653 | ·3668 | ·3684 | ·3701 |
| 400 | ·3614 | ·3625 | ·3638 | ·3651 | ·3666 | ·3681 | ·3697 | ·3714 |
| 401 | ·3628 | ·3639 | ·3651 | ·3664 | ·3679 | ·3694 | ·3710 | ·3727 |
| 402 | ·3641 | ·3652 | ·3664 | ·3678 | ·3692 | ·3707 | ·3723 | ·3740 |
| 403 | ·3655 | ·3666 | ·3678 | ·3691 | ·3705 | ·3720 | ·3736 | ·3752 |
| 404 | ·3669 | ·3679 | ·3691 | ·3704 | ·3718 | ·3733 | ·3749 | ·3765 |
| 405 | ·3683 | ·3693 | ·3705 | ·3718 | ·3732 | ·3746 | ·3762 | ·3778 |
| 406 | ·3696 | ·3707 | ·3718 | ·3731 | ·3745 | ·3759 | ·3774 | ·3791 |
| 407 | ·3710 | ·3720 | ·3732 | ·3744 | ·3758 | ·3772 | ·3787 | ·3804 |
| 408 | ·3724 | ·3734 | ·3745 | ·3757 | ·3771 | ·3785 | ·3800 | ·3816 |
| 409 | ·3737 | ·3747 | ·3758 | ·3771 | ·3784 | ·3798 | ·3813 | ·3829 |
| 410 | ·3751 | ·3761 | ·3772 | ·3784 | ·3797 | ·3811 | ·3826 | ·3842 |
| 411 | ·3765 | ·3775 | ·3785 | ·3797 | ·3810 | ·3824 | ·3839 | ·3855 |
| 412 | ·3778 | ·3788 | ·3799 | ·3811 | ·3824 | ·3837 | ·3852 | ·3867 |
| 413 | ·3792 | ·3802 | ·3812 | ·3824 | ·3837 | ·3850 | ·3865 | ·3880 |
| 414 | ·3805 | ·3815 | ·3826 | ·3838 | ·3850 | ·3863 | ·3878 | ·3893 |
| 415 | ·3819 | ·3829 | ·3839 | ·3851 | ·3864 | ·3877 | ·3891 | ·3906 |
| 416 | ·3833 | ·3843 | ·3853 | ·3864 | ·3877 | ·3890 | ·3904 | ·3918 |
| 417 | ·3846 | ·3856 | ·3866 | ·3878 | ·3890 | ·3903 | ·3917 | ·3931 |
| 418 | ·3860 | ·3870 | ·3879 | ·3891 | ·3903 | ·3916 | ·3930 | ·3944 |
| 419 | ·3873 | ·3883 | ·3893 | ·3905 | ·3917 | ·3929 | ·3943 | ·3956 |
| 420 | ·3887 | ·3897 | ·3907 | ·3918 | ·3930 | ·3942 | ·3956 | ·3969 |

## Spheroids lying.

| Height of the Segment. | 1 Var.<br>,67<br>,68<br>,69 | 2 Var.<br>,70<br>,71<br>,72<br>,73 | 3 Var.<br>,74<br>,75<br>,76 | 4 Var.<br>,77<br>,78<br>,79<br>,80 | 5 Var.<br>,81<br>,82<br>,83<br>,84 | 6 Var.<br>,85<br>,86<br>,87<br>,88 | 7 Var.<br>,89<br>,90<br>,91<br>,92 | 8 Var.<br>,93<br>,94<br>,95 |
|---|---|---|---|---|---|---|---|---|
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 421 | .3901 | .3911 | .3920 | .3931 | .3943 | .3955 | .3969 | 3982 |
| 422 | .3915 | .3924 | .3934 | .3945 | .3956 | .3968 | .3982 | .3995 |
| 423 | .3928 | .3938 | .3947 | .3958 | .3970 | .3981 | .3995 | .4007 |
| 424 | .3942 | .3951 | .3961 | .3972 | .3983 | .3994 | .4008 | .4020 |
| 425 | .3956 | .3965 | .3975 | .3985 | .3996 | .4008 | .4021 | .4033 |
| 426 | .3970 | .3979 | .3988 | .3998 | .4009 | .4021 | .4033 | .4046 |
| 427 | .3984 | .3992 | .4002 | .4012 | .4022 | .4034 | .4046 | .4059 |
| 428 | .3997 | .4006 | .4015 | .4025 | .4036 | .4047 | .4059 | .4071 |
| 429 | .4011 | .4019 | .4029 | .4039 | .4049 | .4060 | .4072 | .4084 |
| 430 | .4025 | .4033 | .4042 | .4052 | .4062 | .4073 | .4085 | .4097 |
| 431 | .4039 | .4047 | .4056 | .4065 | .4075 | .4086 | .4098 | .4110 |
| 432 | .4053 | .4061 | .4070 | .4079 | .4089 | .4099 | .4111 | .4123 |
| 433 | .4067 | .4074 | .4083 | .4092 | .4102 | .4113 | .4124 | .4135 |
| 434 | .4081 | .4088 | .4097 | .4106 | .4115 | .4126 | .4137 | .4148 |
| 435 | .4095 | .4102 | .4110 | .4119 | .4129 | .4139 | .4150 | .4161 |
| 436 | .4108 | .4116 | .4124 | .4132 | .4142 | .4152 | .4163 | .4174 |
| 437 | .4122 | .4130 | .4137 | .4146 | .4155 | .4165 | .4176 | .4187 |
| 438 | .4136 | .4143 | .4151 | .4159 | .4168 | .4179 | .4189 | .4199 |
| 439 | .4150 | .4157 | .4165 | .4173 | .4182 | .4192 | .4202 | .4212 |
| 440 | .4164 | .4171 | .4178 | .4186 | .4195 | .4205 | .4215 | .4225 |
| 441 | .4178 | .4185 | .4192 | .4200 | .4208 | .4218 | .4228 | .4238 |
| 442 | .4192 | .4199 | .4205 | .4213 | .4222 | .4231 | .4241 | .4251 |
| 443 | .4206 | .4212 | .4219 | .4227 | .4235 | .4245 | .4254 | .4264 |
| 444 | .4220 | .4226 | .4233 | .4240 | .4249 | .4258 | .4267 | .4277 |
| 445 | .4234 | .4240 | .4246 | .4254 | .4262 | .4271 | .4280 | .4290 |
| 446 | .4247 | .4254 | .4260 | .4268 | .4275 | .4284 | .4293 | .4302 |
| 447 | .4261 | .4268 | .4274 | .4281 | .4289 | .4297 | .4306 | .4315 |
| 448 | .4275 | .4281 | .4287 | .4295 | .4302 | .4311 | .4319 | .4328 |
| 449 | .4289 | .4295 | .4301 | .4308 | .4316 | .4324 | .4332 | .4341 |
| 450 | .4303 | .4309 | .4315 | .4322 | .4329 | .4337 | .4345 | .4354 |

## Spheroids lying.

| Height of the Segment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
|---|---|---|---|---|---|---|---|---|
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | ,85<br>,86<br>,87<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 451 | .4317 | .4323 | .4328 | .4336 | .4342 | .4350 | .4358 | .4367 |
| 452 | .4331 | .4337 | .4342 | .4349 | .4356 | .4363 | .4371 | .4380 |
| 453 | .4345 | .4350 | .4356 | .4363 | .4369 | .4377 | .4384 | .4393 |
| 454 | .4359 | .4364 | .4369 | .4376 | .4383 | .4390 | .4397 | .4406 |
| 455 | .4373 | .4378 | .4383 | .4390 | .4396 | .4403 | .4410 | .4419 |
| 456 | .4386 | .4392 | .4397 | .4404 | .4409 | .4416 | .4423 | .4431 |
| 457 | .4400 | .4406 | .4410 | .4417 | .4423 | .4429 | .4436 | .4444 |
| 458 | .4414 | .4419 | .4424 | .4431 | .4436 | .4443 | .4449 | .4457 |
| 459 | .4428 | .4433 | .4438 | .4444 | .4450 | .4456 | .4462 | .4470 |
| 460 | .4442 | .4447 | .4451 | .4458 | .4463 | .4469 | .4475 | .4483 |
| 461 | .4456 | .4461 | .4465 | .4472 | .4476 | .4482 | .4488 | .4496 |
| 462 | .4470 | .4475 | .4479 | .4485 | .4490 | .4495 | .4501 | .4509 |
| 463 | .4484 | .4488 | .4492 | .4499 | .4503 | .4509 | .4514 | .4522 |
| 464 | .4498 | .4502 | .4506 | .4512 | .4517 | .4522 | .4527 | .4535 |
| 465 | .4512 | .4516 | .4520 | .4526 | .4530 | .4535 | .4540 | .4548 |
| 466 | .4525 | .4530 | .4533 | .4540 | .4543 | .4548 | .4553 | .4560 |
| 467 | .4539 | .4544 | .4547 | .4553 | .4557 | .4561 | .4566 | .4573 |
| 468 | .4553 | .4557 | .4561 | .4567 | .4570 | .4575 | .4579 | .4586 |
| 469 | .4567 | .4571 | .4575 | .4580 | .4584 | .4588 | .4592 | .4599 |
| 470 | .4581 | .4585 | .4588 | .4594 | .4597 | .4601 | .4605 | .4612 |
| 471 | .4595 | .4599 | .4602 | .4608 | .4610 | .4614 | .4618 | .4625 |
| 472 | .4609 | .4613 | .4616 | .4621 | .4624 | .4627 | .4631 | .4638 |
| 473 | .4623 | .4626 | .4629 | .4635 | .4637 | .4641 | .4644 | .4651 |
| 474 | .4637 | .4640 | .4643 | .4648 | .4651 | .4654 | .4657 | .4664 |
| 475 | .4651 | .4654 | .4657 | .4662 | .4664 | .4667 | .4670 | .4677 |
| 476 | .4664 | .4668 | .4670 | .4676 | .4677 | .4680 | .4683 | .4689 |
| 477 | .4678 | .4682 | .4684 | .4689 | .4691 | .4693 | .4696 | .4702 |
| 478 | .4692 | .4695 | .4698 | .4703 | .4704 | .4707 | .4709 | .4715 |
| 479 | .4706 | .4709 | .4712 | .4716 | .4718 | .4720 | .4722 | .4728 |
| 480 | .4720 | .4723 | .4725 | .4730 | .4731 | .4733 | .4735 | .4741 |

Spheroids lying.

| Height of the Segment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
|---|---|---|---|---|---|---|---|---|
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | 85,<br>86,<br>87,<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 481 | .4734 | .4737 | .4739 | .4744 | .4745 | .4747 | .4748 | .4754 |
| 482 | .4748 | .4751 | .4753 | .4757 | .4758 | .4760 | .4762 | .4767 |
| 483 | .4762 | .4764 | .4766 | .4771 | .4772 | .4774 | .4775 | .4780 |
| 484 | .4776 | .4778 | .4780 | .4784 | .4785 | .4787 | .4789 | .4793 |
| 485 | .4790 | .4792 | .4794 | .4798 | .4799 | .4801 | .4802 | .4806 |
| 486 | .4803 | .4806 | .4808 | .4812 | .4813 | .4814 | .4815 | .4818 |
| 487 | .4817 | .4820 | .4821 | .4825 | .4826 | .4828 | .4829 | .4831 |
| 488 | .4831 | .4833 | .4835 | .4839 | .4840 | .4841 | .4842 | .4844 |
| 489 | .4845 | .4847 | .4849 | .4852 | .4853 | .4855 | .4856 | .4857 |
| 490 | .4859 | .4861 | .4863 | .4866 | .4867 | .4868 | .4869 | .4870 |
| 491 | .4873 | .4875 | .4876 | .4879 | .4880 | .4881 | .4882 | .4883 |
| 492 | .4887 | .4889 | .4890 | .4893 | .4894 | .4894 | .4895 | .4896 |
| 493 | .4901 | .4903 | .4904 | .4906 | .4907 | .4908 | .4908 | .4909 |
| 494 | .4915 | .4917 | .4918 | .4920 | .4920 | .4921 | .4921 | .4922 |
| 495 | .4930 | .4931 | .4931 | .4933 | .4934 | .4934 | .4935 | .4935 |
| 496 | .4944 | .4944 | .4945 | .4946 | .4947 | .4947 | .4948 | .4948 |
| 497 | .4958 | .4958 | .4959 | .4960 | .4960 | .4960 | .4961 | .4961 |
| 498 | .4972 | .4972 | .4972 | .4973 | .4973 | .4974 | .4974 | .4974 |
| 499 | .4986 | .4986 | .4986 | .4987 | .4987 | .4987 | .4987 | .4987 |
| 500 | .5000 | .5000 | .5000 | .5000 | .5000 | .5000 | .5000 | .5000 |
| 501 | .5014 | .5014 | .5014 | .5013 | .5013 | .5013 | .5013 | .5013 |
| 502 | .5028 | .5028 | .5028 | .5027 | .5027 | .5026 | .5026 | .5026 |
| 503 | .5042 | .5042 | .5041 | .5040 | .5040 | .5040 | .5039 | 5039 |
| 504 | .5056 | .5056 | .5055 | .5054 | .5053 | .5053 | .5052 | .5052 |
| 505 | .5070 | .5069 | .5069 | .5067 | .5066 | .5066 | .5065 | .5065 |
| 506 | .5085 | .5083 | .5082 | .5080 | .5080 | .5079 | .5079 | .5078 |
| 507 | .5099 | .5097 | .5096 | .5094 | .5093 | .5092 | .5092 | .5091 |
| 508 | .5113 | .5111 | .5110 | .5107 | .5106 | .5106 | .5105 | .5104 |
| 509 | .5127 | .5125 | .5124 | .5121 | .5120 | .5119 | .5118 | .5117 |
| 510 | .5141 | .5139 | .5137 | .5134 | .5133 | .5132 | .5131 | .5130 |

Spheroids lying.

| Height of the Segment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
|---|---|---|---|---|---|---|---|---|
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | ,85<br>,86<br>,87<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 511 | .5155 | .5153 | .5151 | .5148 | .5147 | .5145 | .5144 | .5143 |
| 512 | .5169 | .5167 | .5165 | .5161 | .5160 | .5159 | .5158 | .5156 |
| 513 | .5183 | .5180 | .5179 | .5175 | .5174 | .5172 | .5171 | .5169 |
| 514 | .5197 | .5194 | .5192 | .5188 | .5187 | .5186 | .5185 | .5182 |
| 515 | .5210 | .5208 | .5206 | .5202 | .5201 | .5199 | .5198 | .5194 |
| 516 | .5224 | .5222 | .5220 | .5216 | .5215 | .5213 | .5211 | .5207 |
| 517 | .5238 | .5236 | .5234 | .5229 | .5228 | .5226 | .5225 | .5220 |
| 518 | .5252 | .5249 | .5247 | .5243 | .5242 | .5240 | .5238 | .5233 |
| 519 | .5266 | .5263 | .5261 | .5256 | .5255 | .5253 | .5252 | .5246 |
| 520 | .5280 | .5277 | .5275 | .5270 | .5269 | .5267 | .5265 | .5259 |
| 521 | .5294 | .5291 | .5288 | .5284 | .5282 | .5280 | .5278 | .5272 |
| 522 | .5308 | .5305 | .5302 | .5297 | .5296 | .5293 | .5291 | .5285 |
| 523 | .5322 | .5318 | .5316 | .5311 | .5309 | .5307 | .5304 | .5298 |
| 524 | .5336 | .5332 | .5330 | .5324 | .5323 | .5320 | .5317 | .5311 |
| 525 | .5349 | .5346 | .5343 | .5338 | .5336 | .5333 | .5330 | .5323 |
| 526 | .5363 | .5360 | .5357 | .5352 | .5349 | .5346 | .5343 | .5336 |
| 527 | .5377 | .5374 | .5371 | .5365 | .5362 | .5359 | .5356 | .5349 |
| 528 | .5391 | .5387 | .5384 | .5379 | .5376 | .5373 | .5369 | .5362 |
| 529 | .5405 | .5401 | .5398 | .5392 | .5390 | .5386 | .5382 | .5375 |
| 530 | .5419 | .5415 | .5412 | .5406 | .5403 | .5399 | .5395 | .5388 |
| 531 | .5433 | 5429 | .5425 | .5420 | .5416 | .5412 | .5408 | .5401 |
| 532 | .5447 | .5443 | .5439 | .5433 | .5430 | .5425 | .5421 | .5414 |
| 533 | .5461 | .5456 | .5453 | .5447 | .5443 | .5439 | .5434 | .5427 |
| 534 | .5475 | .5470 | .5467 | .5460 | .5457 | .5452 | .5447 | .5440 |
| 535 | .5488 | 5484 | .5480 | .5474 | .5470 | .5465 | .5460 | .5452 |
| 536 | .5502 | .5498 | .5494 | .5488 | .5483 | .5478 | .5473 | .5465 |
| 537 | .5516 | .5512 | .5508 | .5501 | .5497 | .5491 | 5486 | .5478 |
| 538 | .5530 | .5525 | .5521 | .5515 | .5510 | .5505 | .5499 | .5491 |
| 539 | .5544 | .5539 | .55[illegible]5 | .5528 | .5524 | .5518 | .5512 | .5504 |
| 540 | .5558 | .5553 | .5549 | .5542 | .5537 | .5531 | .5525 | .5517 |

| Spheroids lying. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Height of the Segment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | ,85<br>,86<br>,87<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 541 | .5572 | .5567 | .5562 | .5556 | .5550 | .5544 | .5538 | .5530 |
| 542 | .5586 | .5581 | .5576 | .5569 | .5564 | .5557 | .5551 | .5543 |
| 543 | .5600 | .5594 | .5590 | .5583 | .5577 | .5571 | .5564 | .5556 |
| 544 | .5614 | .5608 | .5603 | .5596 | .5591 | .5584 | .5577 | .5569 |
| 545 | .5627 | .5622 | .5617 | .5610 | .5604 | .5597 | .5590 | .5581 |
| 546 | .5641 | .5636 | .5631 | .5624 | .5617 | .5610 | .5603 | .5594 |
| 547 | .5655 | .5650 | .5644 | .5637 | .5631 | .5623 | .5616 | .5607 |
| 548 | .5669 | .5663 | .5658 | .5651 | .5644 | .5637 | .5629 | .5620 |
| 549 | .5683 | .5677 | .5672 | .5664 | .5658 | .5650 | .5642 | .5633 |
| 550 | .5697 | .5691 | .5685 | .5678 | .5671 | .5663 | .5655 | .5646 |
| 551 | .5711 | .5705 | .4699 | .5692 | .5684 | .5676 | .5668 | .5659 |
| 552 | .5725 | .5719 | .5713 | .5705 | .5698 | .5689 | .5681 | .5672 |
| 553 | .5739 | .5732 | .5726 | .5719 | .5711 | .5703 | .5694 | .5685 |
| 554 | .5753 | .5746 | .5740 | .5732 | .5725 | .5716 | .5707 | .5698 |
| 555 | .5766 | .5760 | .5754 | .5746 | .5738 | .5729 | .5720 | .5710 |
| 556 | .5780 | .5774 | .5767 | .5760 | .5751 | .5742 | .5733 | .5723 |
| 557 | .5794 | .5788 | .5781 | .5773 | .5765 | .5755 | .5746 | .5736 |
| 558 | .5808 | .5801 | .5795 | .5787 | .5778 | .5769 | .5759 | .5749 |
| 559 | .5822 | .5815 | .5808 | .5800 | .5792 | .5782 | .5772 | .5762 |
| 560 | .5836 | .5829 | .5822 | .5814 | .5805 | .5795 | .5785 | .5775 |
| 561 | .5850 | .5843 | .5835 | .5827 | .5818 | .5808 | .5798 | .5788 |
| 562 | .5864 | .5857 | .5849 | .5841 | .5832 | .5821 | .5811 | .5801 |
| 563 | .5878 | .5870 | .5863 | .5854 | .5845 | .5835 | .5824 | 5813 |
| 564 | .5892 | .5884 | .5876 | .5868 | .5858 | .5848 | .5837 | .5826 |
| 565 | .5905 | .5898 | .5890 | .5881 | .5871 | .5861 | .5850 | .5839 |
| 566 | .5919 | .5912 | .5903 | .5894 | .5885 | .5874 | .5863 | .5852 |
| 567 | .5933 | .5926 | .5917 | .5908 | .5898 | .5887 | .5876 | .5865 |
| 568 | .5947 | .5939 | .5930 | .5921 | .5911 | .5901 | .5889 | .5877 |
| 569 | .5961 | .5953 | .5944 | .5935 | .5925 | .5914 | .5902 | 5890 |
| 570 | .5975 | .5967 | .5958 | .5948 | .5938 | .5927 | .5915 | .5903 |

Spheroids lying.

| Height of the Segment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
|---|---|---|---|---|---|---|---|---|
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | ,85<br>,86<br>,87<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
| | Seg. | Seg. | Seg | Seg. | Seg. | Seg. | Seg. | Seg. |
| 571 | .5989 | .5981 | .5971 | .5961 | .5951 | .5940 | .5928 | .5916 |
| 572 | .6003 | .5994 | .5985 | .5975 | .5964 | .5953 | .5941 | .5929 |
| 573 | .6016 | .6008 | .5998 | .5988 | .5978 | .5966 | .5954 | .5941 |
| 574 | .6030 | .6021 | .6012 | .6002 | .5991 | .5979 | .5967 | .5954 |
| 575 | .6044 | .6035 | .6025 | .6015 | .6004 | .5992 | .5979 | .5967 |
| 576 | .6058 | .6049 | .6039 | .6028 | .6017 | .6006 | .5992 | .5980 |
| 577 | .6072 | .6062 | .6053 | .6042 | .6030 | .6019 | .6005 | .5993 |
| 578 | .6085 | .6076 | .6066 | .6055 | .6044 | .6032 | .6018 | .6005 |
| 579 | .6099 | .6089 | .6080 | .6069 | .6057 | .6045 | .6031 | .6018 |
| 580 | .6113 | .6103 | .6093 | .6082 | .6070 | .6058 | .6044 | .6031 |
| 581 | .6127 | .6117 | .6107 | .6095 | .6083 | .6071 | .6057 | .6044 |
| 582 | .6140 | .6130 | .6121 | .6109 | .6097 | .6084 | .6070 | .6056 |
| 583 | .6154 | .6144 | .6134 | .6122 | .6110 | .6097 | .6083 | .6069 |
| 584 | .6167 | .6157 | .6147 | .6136 | .6123 | .6110 | .6096 | .6082 |
| 585 | .6181 | .6171 | .6161 | .6149 | .6136 | .6123 | .6109 | .6094 |
| 586 | .6195 | .6185 | .6174 | .6162 | .6150 | .6137 | .6122 | .6107 |
| 587 | .6208 | .6198 | .6188 | .6176 | .6163 | .6150 | .6135 | .6120 |
| 588 | .6222 | .6212 | .6201 | .6189 | .6176 | .6163 | .6148 | .6133 |
| 589 | .6235 | .6225 | .6215 | .6203 | .6190 | .6176 | .6161 | .6145 |
| 590 | .6259 | .6239 | .6228 | .6216 | .6203 | .6189 | .6174 | .6158 |
| 591 | .6263 | .6253 | .6242 | .6229 | .6216 | .6202 | .6186 | .6171 |
| 592 | .6276 | .6266 | .6255 | .6243 | .6229 | .6215 | .6200 | .6184 |
| 593 | .6290 | .6280 | .6268 | .6256 | .6242 | .6228 | .6213 | .6196 |
| 594 | .6304 | .6293 | .6282 | .6269 | .6255 | .6241 | .6226 | .6209 |
| 595 | .6317 | .6307 | .6295 | .6282 | .6268 | .6254 | .6238 | .6222 |
| 596 | .6331 | .6321 | .6309 | .6296 | .6282 | .6267 | .6251 | .6235 |
| 597 | .6345 | .6334 | .6322 | .6309 | .6295 | .6280 | .6264 | .6248 |
| 598 | .6359 | .6348 | .6336 | .6322 | .6308 | .6293 | .6277 | .6260 |
| 599 | .6372 | .6361 | .6349 | .6336 | .6321 | .6306 | .6290 | .6273 |
| 600 | .6386 | .6375 | .6362 | .6349 | .6334 | .6319 | .6303 | .6286 |

## Spheroids lying.

| Height of the Segment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
|---|---|---|---|---|---|---|---|---|
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | ,85<br>,86<br>,87<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 601 | .6399 | .6388 | .6376 | .6362 | .6347 | .6332 | .6316 | .6299 |
| 602 | .6413 | .6402 | .6389 | .6376 | .6360 | .6345 | .6329 | .6311 |
| 603 | .6426 | .6415 | .6403 | .6389 | .6374 | .6358 | .6341 | .6324 |
| 604 | 6440 | .6429 | .6416 | .6402 | .6387 | .6371 | .6354 | .6337 |
| 605 | .6453 | 6442 | .6429 | .6415 | .6400 | .6384 | .6367 | .6349 |
| 606 | .6467 | .6455 | .6443 | .6429 | .6413 | .6397 | .6380 | .6362 |
| 607 | .6480 | .6469 | .6456 | .6442 | .6426 | 6410 | .6393 | .6375 |
| 608 | .6494 | .6482 | .6469 | .6455 | .6440 | .6423 | .6405 | .6388 |
| 609 | .6507 | .6496 | .6483 | .6469 | .6453 | .6436 | .6418 | .6400 |
| 610 | .6521 | .6509 | .6496 | .6482 | .6466 | .6449 | .6431 | .6413 |
| 611 | .6534 | .6522 | .6509 | .6495 | .6479 | .6462 | .6444 | .6420 |
| 612 | .6548 | .6536 | .6523 | .6508 | .6492 | .6475 | .6457 | .6438 |
| 613 | .6561 | .6549 | .6536 | .6521 | .6505 | .6488 | .6469 | .6451 |
| 614 | .6575 | .6563 | .6549 | .6534 | .6518 | .6501 | .6482 | .6463 |
| 615 | .6588 | .6576 | .6563 | .6547 | .6531 | .6513 | .6495 | .6476 |
| 616 | .6602 | .6589 | .6576 | .6561 | .6544 | .6520 | .6508 | .6489 |
| 617 | .6615 | .6603 | .6589 | .6574 | .6557 | .6539 | .6521 | .6501 |
| 618 | .6629 | .6616 | .6603 | .6587 | .6570 | .6552 | .6533 | .6514 |
| 619 | .6642 | .6630 | .6616 | .6600 | .6583 | .6565 | .6546 | .6526 |
| 620 | .6656 | .6643 | .6629 | .6613 | .6596 | .6578 | .6559 | .6539 |
| 621 | .6669 | .6656 | .6642 | .6626 | .6609 | .6591 | .6572 | .6552 |
| 622 | .6683 | .6670 | .6656 | .6639 | .6622 | .6604 | .6585 | .6564 |
| 623 | .6696 | .6683 | .6569 | .6653 | .6635 | .6617 | .6597 | .6577 |
| 624 | .6710 | .6697 | .6682 | .6666 | .6648 | .6630 | .6610 | .6590 |
| 625 | .6723 | .6710 | .6695 | .6679 | .6661 | .6642 | .6623 | .6602 |
| 626 | .6737 | .6723 | .6709 | .6692 | .6675 | .6655 | .6646 | .6615 |
| 627 | .6750 | .6737 | .6722 | .6705 | .6688 | .6668 | .6649 | .6628 |
| 628 | .6764 | .6750 | .6735 | .6719 | .6701 | .6681 | .6561 | .6641 |
| 629 | .6777 | .6764 | .6749 | .6732 | .6714 | .6694 | .6674 | .6653 |
| 630 | .6791 | .6777 | .6762 | .6745 | .6727 | .6707 | .6687 | .6666 |

Spheroids lying.

| Height of the Segment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
|---|---|---|---|---|---|---|---|---|
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | ,85<br>,86<br>,87<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 631 | .6804 | .6790 | .6775 | .6758 | .6740 | .6720 | .6700 | .6678 |
| 632 | .6818 | .6804 | .6788 | .6771 | .6753 | .6733 | .6712 | .6691 |
| 633 | .6831 | .6817 | .6801 | .6784 | .6766 | .6746 | .6725 | .6703 |
| 634 | .6845 | .6831 | .6814 | .6797 | .6779 | .6759 | .6738 | .6716 |
| 635 | .6858 | .6844 | .6827 | .6810 | .6792 | .6771 | .6750 | .6728 |
| 636 | .6871 | .6857 | .6841 | .6824 | .6805 | .6784 | .6763 | .6741 |
| 637 | .6885 | .6871 | .6854 | .6837 | .6818 | .6797 | .6776 | .6753 |
| 638 | .6898 | .6884 | .6867 | .6850 | .6831 | .6810 | .6789 | .6766 |
| 639 | .6912 | .6898 | .6880 | .6863 | .6844 | .6823 | .6801 | .6778 |
| 640 | .6925 | .6911 | .6893 | .6876 | .6857 | .6836 | .6814 | .6791 |
| 641 | .6938 | .6924 | .6906 | .6889 | .6870 | .6848 | .6826 | .6803 |
| 642 | .6951 | .6937 | .6919 | .6902 | .6882 | .6861 | .6839 | .6815 |
| 643 | .6964 | .6950 | .6932 | .6914 | .6895 | .6873 | .6851 | .6828 |
| 644 | .6977 | .6963 | .6945 | .6927 | .6907 | .6886 | .6863 | .6840 |
| 645 | .6990 | .6976 | .6958 | .6940 | .6920 | .6898 | .6875 | .6852 |
| 646 | .7004 | .6989 | .6971 | .6953 | .6933 | .6911 | .6888 | .6864 |
| 647 | .7017 | .7002 | .6984 | .6966 | .6945 | .6923 | .6900 | .6876 |
| 648 | .7030 | .7015 | .6997 | .6978 | .6958 | .6936 | .6912 | .6889 |
| 649 | .7043 | .7028 | .7010 | .6991 | .6970 | .6948 | .6925 | .6901 |
| 650 | .7056 | .7041 | .7023 | .7004 | .6983 | .6961 | .6937 | .6913 |
| 651 | .7069 | .7054 | .7036 | .7017 | .6995 | .6973 | .6949 | .6925 |
| 652 | .7082 | .7067 | .7049 | .7029 | .7008 | .6986 | .6962 | .6937 |
| 653 | .7095 | .7080 | .7062 | .7042 | .7020 | .6998 | .6974 | .6950 |
| 654 | .7108 | .7093 | .7074 | .7055 | .7033 | .7011 | .6987 | .6962 |
| 655 | .7121 | .7105 | .7087 | .7067 | .7045 | .7023 | .6999 | .6974 |
| 656 | .7134 | .7118 | .7100 | .7080 | .7058 | .7035 | .7011 | .6986 |
| 657 | .7147 | .7131 | .7113 | .7093 | .7070 | .7048 | .7024 | .6998 |
| 658 | .7160 | .7144 | .7128 | .7106 | .7083 | .7060 | .7036 | .7011 |
| 659 | .7173 | .7157 | .7139 | .7118 | .7095 | .7073 | .7049 | .7023 |
| 660 | .7186 | .7170 | .7152 | .7131 | .7108 | .7085 | .7061 | .7035 |

| Spheroids lying. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Height of the Segment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | ,85<br>,86<br>,87<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 661 | ·7199 | ·7183 | ·7165 | ·7144 | ·7121 | ·7097 | ·7073 | ·7047 |
| 662 | ·7212 | ·7196 | ·7178 | ·7156 | ·7133 | ·7110 | ·7086 | ·7059 |
| 663 | ·7225 | ·7209 | ·7190 | ·7169 | ·7146 | ·7122 | ·7098 | ·7072 |
| 664 | ·7238 | ·7222 | ·7203 | ·7182 | ·7159 | ·7135 | ·7110 | ·7084 |
| 665 | ·7251 | ·7234 | ·7216 | ·7194 | ·7171 | ·7147 | ·7122 | ·7096 |
| 666 | ·7264 | ·7247 | ·7229 | ·7207 | ·7184 | ·7160 | ·7135 | ·7108 |
| 667 | ·7277 | ·7260 | ·7241 | ·7220 | ·7197 | ·7172 | ·7147 | ·7120 |
| 668 | ·7290 | ·7273 | ·7254 | ·7233 | ·7210 | ·7185 | ·7159 | ·7133 |
| 669 | ·7303 | ·7286 | ·7267 | ·7245 | ·7222 | ·7197 | ·7172 | ·7145 |
| 670 | ·7316 | ·7299 | ·7280 | ·7258 | ·7235 | ·7210 | ·7184 | ·7157 |
| 671 | ·7329 | ·7312 | ·7292 | ·7271 | ·7247 | ·7222 | ·7196 | ·7169 |
| 672 | ·7342 | ·7325 | ·7305 | ·7283 | ·7260 | ·7235 | ·7209 | ·7181 |
| 673 | ·7355 | ·7337 | ·7318 | ·7296 | ·7272 | ·7247 | ·7221 | ·7194 |
| 674 | ·7368 | ·7350 | ·7331 | ·7308 | ·7285 | ·7260 | ·7233 | ·7206 |
| 675 | ·7380 | ·7363 | ·7343 | ·7321 | ·7297 | ·7272 | ·7245 | ·7218 |
| 676 | ·7393 | ·7376 | ·7356 | ·7334 | ·7310 | ·7284 | ·7258 | ·7230 |
| 677 | ·7406 | ·7389 | ·7369 | ·7346 | ·7322 | ·7297 | ·7270 | ·7242 |
| 678 | ·7419 | ·7401 | ·7382 | ·7359 | ·7335 | ·7309 | ·7282 | ·7255 |
| 679 | ·7432 | ·7414 | ·7394 | ·7371 | ·7347 | ·7322 | ·7295 | ·7267 |
| 680 | ·7445 | ·7427 | ·7407 | ·7384 | ·7360 | ·7334 | ·7307 | ·7279 |
| 681 | ·7458 | ·7440 | ·7420 | ·7397 | ·7372 | ·7346 | ·7319 | ·7291 |
| 682 | ·7471 | ·7453 | ·7432 | ·7409 | ·7385 | ·7359 | ·7331 | ·7303 |
| 683 | ·7483 | ·7465 | ·7445 | ·7422 | ·7397 | ·7371 | ·7344 | ·7315 |
| 684 | ·7496 | ·7478 | ·7458 | ·7434 | ·7410 | ·7383 | ·7356 | ·7327 |
| 685 | ·7509 | ·7491 | ·7470 | ·7447 | ·7422 | ·7395 | ·7368 | ·7339 |
| 686 | ·7522 | ·7504 | ·7483 | ·7460 | ·7435 | ·7408 | ·7380 | ·7351 |
| 687 | ·7535 | ·7517 | ·7495 | ·7472 | ·7447 | ·7420 | ·7392 | ·7363 |
| 688 | ·7547 | ·7529 | ·7508 | ·7485 | ·7460 | ·7432 | ·7405 | ·7375 |
| 689 | ·7560 | ·7542 | ·7520 | ·7497 | 7472 | ·7445 | ·7417 | ·7387 |
| 690 | ·7573 | ·7555 | ·7533 | ·7510 | ·7485 | ·7457 | ·7429 | ·7399 |

Spheroids lying.

| Height of the Segment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
|---|---|---|---|---|---|---|---|---|
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | 85,<br>86,<br>87,<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 691 | ·7585 | ·7567 | ·7545 | ·7522 | ·7497 | ·7469 | ·7441 | ·7411 |
| 692 | ·7598 | ·7580 | ·7558 | ·7534 | ·7509 | ·7481 | ·7453 | ·7423 |
| 693 | ·7610 | ·7592 | ·7570 | ·7547 | ·7521 | ·7493 | ·7465 | ·7435 |
| 694 | ·7623 | ·7605 | ·7583 | ·7559 | ·7533 | ·7505 | ·7477 | ·7447 |
| 695 | ·7635 | ·7617 | ·7595 | ·7571 | ·7545 | ·7517 | ·7488 | ·7458 |
| 696 | ·7648 | ·7629 | ·7608 | ·7583 | ·7557 | ·7529 | ·7500 | ·7470 |
| 697 | ·7660 | ·7642 | ·7620 | ·7595 | ·7569 | ·7541 | ·7512 | ·7482 |
| 698 | ·7673 | ·7654 | ·7632 | ·7608 | ·7581 | ·7553 | ·7524 | ·7494 |
| 699 | ·7685 | ·7667 | ·7645 | ·7620 | ·7593 | ·7565 | ·7536 | ·7506 |
| 700 | ·7698 | ·7679 | ·7657 | ·7632 | ·7605 | ·7577 | ·7548 | ·7518 |
| 701 | ·7710 | ·7691 | ·7669 | ·7644 | ·7617 | ·7589 | ·7560 | ·7530 |
| 702 | ·7722 | ·7703 | ·7682 | ·7657 | ·7629 | ·7601 | ·7572 | ·7542 |
| 703 | ·7734 | ·7715 | ·7694 | ·7669 | ·7642 | ·7613 | ·7584 | ·7554 |
| 704 | ·7746 | ·7727 | ·7706 | ·7682 | ·7654 | ·7625 | ·7596 | ·7566 |
| 705 | ·7758 | ·7739 | ·7719 | ·7694 | ·7666 | ·7638 | ·7608 | ·7578 |
| 706 | ·7771 | ·7752 | ·7731 | ·7706 | ·7678 | ·7650 | ·7620 | ·7589 |
| 707 | ·7783 | ·7764 | ·7743 | ·7719 | ·7690 | ·7662 | ·7632 | ·7601 |
| 708 | ·7795 | ·7776 | ·7756 | ·7731 | ·7703 | ·7674 | ·7644 | ·7613 |
| 709 | ·7807 | ·7788 | ·7768 | ·7744 | ·7715 | ·7686 | ·7656 | ·7625 |
| 710 | ·7819 | ·7800 | ·7780 | ·7756 | ·7727 | ·7698 | ·7668 | ·7637 |
| 711 | ·7831 | ·7812 | ·7792 | ·7768 | ·7739 | ·7710 | ·7680 | ·7649 |
| 712 | ·7844 | ·7825 | ·7804 | ·7780 | ·7751 | ·7722 | ·7692 | ·7660 |
| 713 | ·7856 | ·7837 | ·7816 | ·7792 | ·7763 | ·7734 | ·7704 | ·7672 |
| 714 | ·7869 | ·7849 | ·7829 | ·7804 | ·7775 | ·7746 | ·7716 | ·7684 |
| 715 | ·7881 | ·7861 | ·7841 | ·7816 | ·7787 | ·7758 | ·7727 | ·7695 |
| 716 | ·7894 | ·7874 | ·7853 | ·7827 | ·7800 | ·7770 | ·7739 | ·7707 |
| 717 | ·7906 | ·7886 | ·7865 | ·7839 | ·7812 | ·7782 | ·7751 | ·7719 |
| 718 | ·7919 | ·7898 | ·7877 | ·7851 | ·7824 | ·7794 | ·7763 | ·7731 |
| 719 | ·7931 | ·7911 | ·7889 | ·7863 | ·7836 | ·7806 | ·7775 | ·7742 |
| 720 | ·7944 | ·7923 | ·7901 | ·7875 | ·7848 | ·7818 | ·7787 | ·7754 |

## Spheroids lying.

| Height of the Segment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
|---|---|---|---|---|---|---|---|---|
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | ,85<br>,86<br>,87<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 721 | .7956 | .7935 | .7913 | .7887 | .7860 | .7830 | .7799 | .7766 |
| 722 | .7968 | .7947 | .7925 | .7899 | .7872 | .7842 | .7811 | .7777 |
| 723 | .7980 | .7959 | .7937 | .7911 | .7884 | .7853 | .7822 | .7789 |
| 724 | .7992 | .7971 | .7949 | .7923 | .7896 | .7865 | .7834 | .7800 |
| 725 | .8004 | .7983 | .7961 | .7935 | .7908 | .7877 | .7846 | .7812 |
| 726 | .8016 | .7996 | .7973 | .7947 | .7920 | .7889 | .7858 | .7824 |
| 727 | .8028 | .8008 | .7985 | .7959 | .7932 | .7901 | .7870 | .7835 |
| 728 | .8040 | .8020 | .7997 | .7971 | .7943 | .7912 | .7881 | .7847 |
| 729 | .8052 | .8032 | .8009 | .7983 | .7955 | .7924 | .7893 | .7858 |
| 730 | .8064 | .8044 | .8021 | .7995 | .7967 | .7936 | .7905 | .7870 |
| 731 | .8076 | .8056 | .8033 | .8007 | .7979 | .7948 | .7916 | .7881 |
| 732 | .8088 | .8067 | .8045 | .8018 | .7990 | .7959 | .7928 | .7893 |
| 733 | .8099 | .8079 | .8056 | .8030 | .8002 | .7971 | .7939 | .7904 |
| 734 | .8111 | .8091 | .8068 | .8042 | .8014 | .7983 | .7951 | .7916 |
| 735 | .8123 | .8102 | .8080 | .8053 | .8025 | .7994 | .7962 | .7927 |
| 736 | .8135 | .8114 | .8092 | .8065 | .8037 | .8006 | .7974 | .7938 |
| 737 | .8147 | .8126 | .8104 | .8077 | .8049 | .8018 | .7985 | .7950 |
| 738 | .8158 | .8138 | .8115 | .8089 | .8061 | .8030 | .7997 | .7961 |
| 739 | .8170 | .8149 | .8127 | .8100 | .8072 | .8041 | .8008 | .7973 |
| 740 | .8182 | .8161 | .8139 | .8112 | .8084 | .8053 | .8020 | .7984 |
| 741 | .8195 | .8173 | .8151 | .8123 | .8095 | .8063 | .8030 | .7994 |
| 742 | .8208 | .8186 | .8162 | .8134 | .8105 | .8074 | .8041 | .8005 |
| 743 | .8222 | .8198 | .8174 | .8145 | .8115 | .8084 | .8051 | .8015 |
| 744 | .8235 | .8211 | .8185 | .8156 | .8126 | .8095 | .8061 | .8025 |
| 745 | .8248 | .8223 | .8197 | .8167 | .8136 | .8105 | .8071 | .8035 |
| 746 | .8261 | .8235 | .8209 | .8179 | .8147 | .8115 | .8082 | .8046 |
| 747 | .8274 | .8248 | .8220 | .8190 | .8157 | .8126 | .8092 | .8056 |
| 748 | .8288 | .8260 | .8232 | .8201 | .8168 | .8136 | .8102 | .8066 |
| 749 | .8301 | .8273 | .8243 | .8212 | .8178 | .8147 | .8113 | .8077 |
| 750 | .8314 | .8285 | .8255 | .8223 | .8189 | .8157 | .8123 | .8087 |

Spheroids lying.

| Height of the Seg-ment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
|---|---|---|---|---|---|---|---|---|
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | ,85<br>,86<br>,87<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 751 | .8326 | .8296 | .8267 | .8234 | .8200 | .8168 | .8134 | .8098 |
| 752 | .8337 | .8308 | .8278 | .8246 | .8212 | .8179 | .8145 | .8109 |
| 753 | .8349 | .8319 | .8289 | .8257 | .8223 | .8191 | .8156 | .8120 |
| 754 | .8361 | .8331 | .8301 | .8268 | .8235 | .8202 | .8167 | .8131 |
| 755 | .8372 | .8342 | .8312 | .8279 | .8246 | .8213 | .8178 | .8142 |
| 756 | .8384 | .8354 | .8324 | .8291 | .8257 | .8224 | .8189 | .8154 |
| 757 | .8396 | .8365 | .8335 | .8302 | .8269 | .8235 | .8200 | .8165 |
| 758 | .8408 | .8377 | .8346 | .8313 | .8280 | .8247 | .8211 | .8176 |
| 759 | .8419 | .8388 | .8358 | .8325 | .8292 | .8258 | .8222 | .8187 |
| 760 | .8431 | .8400 | .8369 | .8336 | .8303 | .8269 | .8233 | .8198 |
| 761 | .8443 | .8412 | .8381 | .8348 | .8314 | .8280 | .8244 | .8209 |
| 762 | .8455 | .8423 | .8392 | .8359 | .8326 | .8292 | .8255 | .8220 |
| 763 | .8466 | .8435 | .8404 | .8371 | .8337 | .8303 | .8266 | .8231 |
| 764 | .8478 | .8446 | .8415 | .8382 | .8349 | .8314 | .8277 | .8242 |
| 765 | .8490 | .8458 | .8427 | .8394 | .8360 | .8325 | .8288 | .8252 |
| 766 | .8502 | .8470 | .8439 | .8406 | .8371 | .8337 | .8300 | .8263 |
| 767 | .8514 | .8481 | .8450 | .8417 | .8383 | .8348 | .8311 | .8274 |
| 768 | .8525 | .8493 | .8462 | .8429 | .8394 | .8359 | .8322 | .8285 |
| 769 | .8537 | .8504 | .8473 | .8440 | .8406 | .8371 | .8333 | .8296 |
| 770 | .8549 | .8516 | .8485 | .8452 | .8417 | .8382 | .8344 | .8307 |
| 771 | .8560 | .8527 | .8495 | .8462 | .8428 | .8393 | .8355 | .8318 |
| 772 | .8570 | .8537 | .8506 | .8473 | .8438 | .8403 | .8365 | .8328 |
| 773 | .8581 | .8548 | .8517 | .8483 | .8449 | .8414 | .8376 | .8339 |
| 774 | .8591 | .8558 | .8527 | .8494 | .8459 | .8424 | .8387 | .8349 |
| 775 | .8602 | .8569 | .8538 | .8504 | .8470 | .8435 | .8397 | .8360 |
| 776 | .8613 | .8580 | .8549 | .8515 | .8481 | .8446 | .8408 | .8371 |
| 777 | .8623 | .8590 | .8559 | .8525 | .8491 | .8456 | .8419 | .8381 |
| 778 | .8634 | .8601 | .8570 | .8536 | .8502 | .8467 | .8430 | .8392 |
| 779 | .8644 | .8611 | .8580 | .8546 | .8512 | .8477 | .8440 | .8402 |
| 780 | .8655 | .8622 | .8591 | .8557 | .8523 | .8488 | .8451 | .8413 |

Spheroids lying.

| Height of the Segment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
|---|---|---|---|---|---|---|---|---|
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | ,85<br>,86<br>,87<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 781 | .8666 | .8633 | .8602 | .8568 | .8534 | .8499 | .8462 | .8424 |
| 782 | .8676 | .8644 | .8612 | .8578 | .8544 | .8509 | .8472 | .8434 |
| 783 | .8687 | .8654 | .8623 | .8589 | .8555 | .8520 | .8483 | .8445 |
| 784 | .8698 | .8665 | .8634 | .8600 | .8565 | .8530 | .8493 | .8456 |
| 785 | .8708 | .8676 | .8644 | .8610 | .8576 | .8541 | .8504 | .8466 |
| 786 | .8719 | .8687 | .8655 | .8621 | .8587 | .8552 | .8515 | .8477 |
| 787 | .8730 | .8698 | .8666 | .8632 | .8597 | .8562 | .8525 | .8488 |
| 788 | .8741 | .8708 | .8676 | .8643 | .8608 | .8573 | .8536 | .8499 |
| 789 | .8751 | .8719 | .8687 | .8653 | .8618 | .8583 | .8546 | .8509 |
| 790 | .8762 | .8730 | .8698 | .8664 | .8629 | .8594 | .8557 | .8520 |
| 791 | .8773 | .8741 | .8708 | .8675 | .8640 | .8604 | .8567 | .8530 |
| 792 | .8784 | .8751 | .8719 | .8685 | .8650 | .8615 | .8578 | .8540 |
| 793 | .8795 | .8762 | .8730 | .8696 | .8661 | .8625 | .5588 | .8551 |
| 794 | .8806 | .8773 | .8740 | .8706 | .8671 | .8636 | .8599 | .8561 |
| 795 | .8816 | .8783 | .8751 | .8717 | .8682 | .8646 | .8609 | .8571 |
| 796 | .8827 | .8794 | .8761 | .8728 | .8693 | .8657 | .8619 | .8581 |
| 797 | .8838 | .8805 | .8772 | .8738 | .8703 | .8667 | .8630 | .8591 |
| 798 | .8849 | .8816 | .8783 | .8749 | .8714 | .8678 | .8640 | .8602 |
| 799 | .8860 | .8826 | .8793 | .8759 | .8724 | .8688 | .8651 | .8612 |
| 800 | .8871 | .8837 | .8804 | .8770 | .8745 | .8699 | .8661 | .8622 |
| 801 | .8881 | .8847 | .8814 | .8780 | .8745 | .8709 | .8671 | .8632 |
| 802 | .8891 | .8858 | .8824 | .8791 | .8755 | .8719 | .8681 | .8642 |
| 803 | .8902 | .8868 | .8835 | .8801 | .8766 | .8729 | .8691 | .8652 |
| 804 | .8912 | .8878 | .8845 | .8811 | .8776 | .8739 | .8701 | .8662 |
| 805 | .8922 | .8888 | .8855 | .8821 | .8786 | .8749 | .8711 | .8672 |
| 806 | .8932 | .8899 | .8865 | .8832 | .8796 | .8760 | .8722 | .8683 |
| 807 | .8942 | .8909 | .8876 | .8842 | .8806 | .8770 | .8732 | .8693 |
| 808 | .8953 | .8919 | .8886 | .8852 | .8817 | .8780 | .8742 | .8703 |
| 809 | .8963 | .8930 | .8896 | .8863 | .8827 | .8790 | .8752 | .8713 |
| 810 | .8973 | .8940 | .8906 | .8873 | .8837 | .8800 | .8762 | .8723 |

Spheroids lying.

| Height of the Segment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
|---|---|---|---|---|---|---|---|---|
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | ,85<br>,86<br>,87<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 811 | .8983 | .8950 | .8916 | .8883 | .8847 | .8810 | .8772 | .8733 |
| 812 | .8993 | .8960 | .8926 | .8893 | .8857 | .8820 | .8782 | .8743 |
| 813 | .9003 | .8971 | .8936 | .8903 | .8867 | .8830 | .8792 | .8753 |
| 814 | .9013 | .8981 | .8946 | .8913 | .8877 | .8840 | .8802 | .8763 |
| 815 | .9023 | .8991 | .8956 | .8923 | .8887 | .8850 | .8812 | .8773 |
| 816 | .9034 | .9001 | .8966 | .8934 | .8898 | .8861 | .8822 | .8783 |
| 817 | .9044 | .9011 | .8976 | .8944 | .8908 | .8871 | .8832 | .8793 |
| 818 | .9054 | .9022 | .8987 | .8954 | .8918 | .8881 | .8842 | .8803 |
| 819 | .9064 | .9032 | .8997 | .8964 | .8928 | .8891 | .8852 | .8813 |
| 820 | .9074 | .9042 | .9007 | .8974 | .8938 | .8901 | .8862 | .8823 |
| 821 | .9083 | .9051 | .9016 | .8983 | .8947 | .8910 | .8872 | .8833 |
| 822 | .9093 | .9061 | .9026 | .8993 | .8957 | .8920 | .8881 | .8842 |
| 823 | .9102 | .9070 | .9036 | .9002 | .8966 | .8929 | .8891 | .8852 |
| 824 | .9112 | .9080 | .9045 | .9012 | .8976 | .8939 | .8900 | .8861 |
| 825 | .9121 | 9089 | .9055 | .9021 | .8985 | .8948 | .8910 | .8871 |
| 826 | .9130 | .9098 | .9064 | .9030 | .8994 | .8958 | .8920 | .8881 |
| 827 | .9140 | .9108 | .9074 | .9040 | .9004 | .8967 | .8929 | .8890 |
| 828 | .9149 | .9117 | .9084 | .9049 | .9013 | .8977 | .8939 | .8900 |
| 829 | .9159 | .9127 | .9093 | .9059 | .9023 | .8986 | .8948 | .8909 |
| 830 | .9168 | .9136 | .9103 | .9068 | .9032 | .8996 | .8958 | .8919 |
| 831 | .9175 | .9145 | .9112 | .9077 | .9041 | .9005 | .8967 | .8928 |
| 832 | .9183 | .9155 | .9122 | .9087 | .9051 | .9015 | .8977 | .8938 |
| 833 | .9191 | .9164 | .9131 | .9096 | .9060 | .9024 | .8986 | .8947 |
| 834 | .9199 | .9174 | .9140 | .9106 | .9070 | .9034 | .8996 | .8957 |
| 835 | .9207 | .9183 | .9150 | .9115 | .9079 | .9043 | .9005 | .8966 |
| 836 | .9214 | .9192 | .9159 | .9125 | .9089 | .9052 | .9015 | .8975 |
| 837 | .9222 | .9202 | .9169 | .9134 | .9098 | .9062 | .9024 | .8985 |
| 838 | .9230 | .9211 | .9178 | .9144 | .9108 | .9071 | .9034 | .8994 |
| 839 | .9237 | .9221 | .9187 | .9153 | .9117 | .9081 | .9043 | .9004 |
| 840 | .9245 | .9230 | .9197 | .9163 | .9127 | .9090 | .9053 | .9013 |

Spheroids lying.

| Height of the Segment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
|---|---|---|---|---|---|---|---|---|
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | ,85<br>,86<br>,87<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 841 | .9254 | .9239 | .9206 | .9172 | .9136 | .9099 | .9062 | .9022 |
| 842 | .9262 | .9249 | .9215 | .9181 | .9145 | .9108 | .9071 | .9032 |
| 843 | .9271 | .9258 | .9224 | .9190 | .9155 | .9118 | .9080 | .9041 |
| 844 | .9280 | .9267 | .9233 | .9199 | .9164 | .9127 | .9089 | .9050 |
| 845 | .9289 | .9276 | .9242 | .9208 | .9173 | .9136 | .9098 | .9059 |
| 846 | .9297 | .9286 | .9251 | .9218 | .9182 | .9145 | .9108 | .9069 |
| 847 | .9306 | .9295 | .9260 | .9227 | .9191 | .9154 | .9117 | .9078 |
| 848 | .9315 | .9304 | .9269 | .9236 | .9201 | .9164 | .9126 | .9087 |
| 849 | .9323 | .9314 | .9278 | .9245 | .9210 | .9173 | .9135 | .9097 |
| 850 | .9332 | .9323 | .9287 | .9254 | .9219 | .9182 | .9144 | .9106 |
| 851 | .9340 | .9330 | .9296 | .9263 | .9228 | .9190 | .9154 | .9115 |
| 852 | .9348 | .9337 | .9305 | .9271 | .9236 | .9199 | .9163 | .9124 |
| 853 | .9357 | .9345 | .9313 | .9280 | .9245 | .9207 | .9171 | .9133 |
| 854 | .9365 | .9352 | .9322 | .9289 | .9253 | .9215 | .9180 | .9142 |
| 855 | .9373 | .9359 | .9331 | .9297 | .9262 | .9223 | .9189 | .9150 |
| 856 | .9381 | .9366 | .9339 | .9306 | .9271 | .9232 | .9198 | .9159 |
| 857 | .9389 | .9373 | .9348 | .9315 | .9279 | .9240 | .9207 | .9168 |
| 858 | .9398 | .9381 | .9357 | .9324 | .9288 | .9248 | .9215 | .9177 |
| 859 | .9406 | .9388 | .9366 | .9332 | .9296 | .9257 | .9224 | .9186 |
| 860 | .9414 | .9395 | .9374 | .9341 | .9305 | .9265 | .9233 | .9195 |
| 861 | .9422 | .9403 | .9383 | .9349 | .9313 | .9274 | .9241 | .9204 |
| 862 | .9429 | .9411 | .9391 | .9357 | .9322 | .9283 | .9250 | .9212 |
| 863 | .9437 | .9419 | .9399 | .9366 | .9330 | .9291 | .9258 | .9221 |
| 864 | .9446 | .9427 | .9408 | .9374 | .9339 | .9300 | .9267 | .9229 |
| 865 | .9453 | .9435 | .9416 | .9382 | .9347 | .9309 | .9275 | .9238 |
| 866 | .9460 | .9443 | .9424 | .9390 | .9355 | .9318 | .9284 | .9247 |
| 867 | .9468 | .9451 | .9432 | .9398 | .9364 | .9327 | .9292 | .9255 |
| 868 | .9476 | .9459 | .9441 | .9407 | .9372 | .9335 | .9301 | .9264 |
| 869 | .9483 | .9467 | .9449 | .9415 | .9381 | .9344 | .9309 | .9272 |
| 870 | .9491 | .9475 | .9457 | .9423 | .9389 | .9353 | .9318 | .9281 |

Spheroids lying.

| Height of the Segment. | 1 Var.<br>,67<br>,68<br>,69<br>Seg. | 2 Var.<br>,70<br>,71<br>,72<br>,73<br>Seg. | 3 Var.<br>,74<br>,75<br>,76<br>Seg. | 4 Var.<br>,77<br>,78<br>,79<br>,80<br>Seg. | 5 Var.<br>,81<br>,82<br>,83<br>,84<br>Seg. | 6 Var.<br>,85<br>,86<br>,87<br>,88<br>Seg. | 7 Var.<br>,89<br>,90<br>,91<br>,92<br>Seg. | 8 Var.<br>,93<br>,94<br>,95<br>Seg. |
|---|---|---|---|---|---|---|---|---|
| 871 | .9498 | .9482 | .9464 | .9434 | .9399 | .9363 | .9328 | .9290 |
| 872 | .9505 | .9490 | .9472 | .9446 | .9409 | .9372 | .9339 | .9299 |
| 873 | .9513 | .9497 | .9479 | .9457 | .9419 | .9382 | .9349 | .9308 |
| 874 | .9520 | .9505 | .9487 | .9469 | .9429 | .9392 | .9360 | .9317 |
| 875 | 9527 | .9512 | .9494 | .9480 | .9439 | .9401 | .9370 | .9325 |
| 876 | .9534 | .9519 | .9501 | .9491 | .9450 | .9411 | .9381 | .9334 |
| 877 | .9541 | .9527 | .9509 | .9503 | .9460 | .9421 | .9391 | .9343 |
| 878 | 9549 | .9534 | .9516 | .9514 | .9470 | .9431 | .9402 | .9352 |
| 879 | .9556 | .9542 | .9524 | .9526 | .9480 | .9440 | .9412 | .9361 |
| 880 | .9563 | .9549 | .9531 | .9537 | .9490 | .9450 | .9423 | .9370 |
| 881 | .9570 | .9556 | .9538 | .9543 | .9499 | .9458 | .9431 | .9378 |
| 882 | 9576 | .9563 | .9545 | .9549 | .9507 | .9466 | .9439 | .9386 |
| 883 | .9583 | .9570 | .9553 | .9556 | .9516 | .9474 | .9447 | .9394 |
| 884 | .9590 | .9577 | .9560 | .9562 | .9525 | .9482 | .9455 | .9402 |
| 885 | .9596 | .9584 | .9567 | .9568 | .9533 | .9489 | .9462 | .9410 |
| 886 | .9603 | .9591 | .9574 | .9574 | .9542 | .9497 | .9470 | .9418 |
| 887 | .9610 | .9598 | .9581 | .9580 | .9551 | .9505 | .9478 | .9426 |
| 888 | .9617 | .9605 | .9589 | .9587 | .9560 | .9513 | .9486 | .9434 |
| 889 | .9623 | .9612 | .9596 | .9593 | .9568 | .9521 | .9494 | .9442 |
| 890 | .9630 | .9619 | .9603 | .9599 | .9577 | .9529 | .9502 | .9450 |
| 891 | .9636 | .9625 | .9610 | .9604 | .9584 | .9536 | .9510 | .9458 |
| 892 | .9642 | .9632 | .9616 | .9610 | .9592 | .9544 | .9517 | .9465 |
| 893 | .9649 | .9638 | .9623 | .9615 | .9599 | .9551 | .9525 | .9473 |
| 894 | .9655 | .9644 | .9630 | .9620 | 9607 | .9559 | .9532 | .9481 |
| 895 | .9661 | .9650 | .9636 | .9625 | .9614 | .9566 | .9540 | .9488 |
| 896 | .9667 | .9657 | .9643 | .9631 | .9621 | .9573 | .9548 | .9496 |
| 897 | .9673 | .9663 | .9650 | .9636 | .9629 | .9581 | .9555 | .9504 |
| 898 | .9680 | .9669 | .9657 | .9641 | .9636 | .9588 | .9563 | .9512 |
| 899 | .9686 | .9676 | .9663 | .9647 | .9644 | .9596 | .9570 | 9519 |
| 900 | .9692 | .9682 | .9670 | .9652 | .9651 | .9603 | .9578 | .9527 |

Spheroids lying.

| Height of the Seg-ment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
|---|---|---|---|---|---|---|---|---|
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | ,85<br>,86<br>,87<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 901 | .9698 | .9688 | .9676 | .9658 | .9656 | .9610 | .9585 | .9534 |
| 902 | .9703 | .9694 | .9682 | .9665 | .9661 | .9617 | .9592 | .9542 |
| 903 | .9709 | .9700 | .9688 | .9671 | .9666 | .9625 | .9600 | .9549 |
| 904 | .9715 | .9706 | .9694 | .9678 | .9671 | .9632 | .9607 | .9556 |
| 905 | .9721 | .9711 | .9700 | .9684 | .9676 | .9639 | .9614 | .9563 |
| 906 | .9726 | .9717 | .9707 | .9690 | .9681 | .9646 | .9621 | .9571 |
| 907 | .9732 | .9723 | .9713 | .9697 | .9686 | .9653 | .9628 | .9578 |
| 908 | .9738 | .9729 | .9719 | .9703 | .9691 | .9661 | .9636 | .9585 |
| 909 | .9743 | .9735 | .9725 | .9710 | .9696 | .9668 | .9643 | .9593 |
| 910 | .9749 | .9741 | .9731 | .9716 | .9701 | .9675 | .9650 | .9600 |
| 911 | .9754 | .9746 | .9736 | .9722 | .9707 | .9683 | .9657 | .9607 |
| 912 | .9759 | .9752 | .9742 | .9728 | .9712 | .9690 | .9664 | .9614 |
| 913 | .9764 | .9757 | .9747 | .9733 | .9718 | .9698 | .9670 | .9621 |
| 914 | .9769 | .9762 | .9753 | .9739 | .9724 | .9706 | .9677 | .9628 |
| 915 | .9774 | .9767 | .9758 | .9745 | .9729 | .9713 | .9684 | .9635 |
| 916 | .9780 | .9773 | .9764 | .9751 | .9735 | .9721 | .9693 | .9642 |
| 917 | .9785 | .9778 | .9769 | .9757 | .9741 | .9729 | .9698 | .9649 |
| 918 | .9790 | .9783 | .9775 | .9762 | .9747 | .9737 | .9704 | .9656 |
| 919 | .9795 | .9789 | .9780 | .9768 | .9752 | .9744 | .9711 | .9663 |
| 920 | .9800 | .9794 | .9786 | .9774 | .9758 | .9752 | .9718 | .9670 |
| 921 | .9805 | .9799 | .9791 | .9779 | .9763 | .9757 | .9724 | .9676 |
| 922 | .9809 | .9803 | .9796 | .9784 | .9769 | .9762 | .9731 | .9683 |
| 923 | .9814 | .9808 | .9801 | .9790 | .9774 | .9767 | .9737 | .9689 |
| 924 | .9818 | .9813 | .9806 | .9795 | .9780 | .9772 | .9743 | .9696 |
| 925 | .9823 | .9817 | .9810 | .9800 | .9785 | .9777 | .9749 | .9702 |
| 926 | .9828 | .9822 | .9815 | .9805 | .9791 | .9783 | .9756 | .9709 |
| 927 | .9832 | .9827 | .9820 | .9810 | .9796 | .9788 | .9762 | .9715 |
| 928 | .9837 | .9832 | .9825 | .9816 | .9802 | .9793 | .9768 | .9722 |
| 929 | .9841 | .9836 | .9830 | .9821 | .9807 | .9798 | .9775 | .9728 |
| 930 | .9846 | .9841 | .9835 | .9826 | .9813 | .9803 | .9781 | .9735 |

Spheroids lying.

| Height of the Segment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
|---|---|---|---|---|---|---|---|---|
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | 85,<br>86,<br>87,<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 931 | .9850 | .9845 | .9839 | .9831 | .9818 | .9807 | .9787 | .9741 |
| 932 | .9854 | .9849 | .9844 | .9835 | .9823 | .9812 | .9792 | .9747 |
| 933 | .9858 | .9853 | .9848 | .9840 | .9828 | .9816 | .9798 | .9753 |
| 934 | .9862 | .9857 | .9852 | .9844 | .9833 | .9821 | .9804 | .9759 |
| 935 | .9866 | .9861 | .9856 | .9849 | .9837 | .9825 | .9809 | .9765 |
| 936 | .9870 | .9866 | .9861 | .9854 | .9842 | .9829 | .9815 | .9772 |
| 937 | .9874 | .9870 | .9865 | .9858 | .9847 | .9834 | .9821 | .9778 |
| 938 | .9878 | .9874 | .9869 | .9863 | .9852 | .9838 | .9827 | .9784 |
| 939 | .9882 | .9878 | .9874 | .9867 | .9857 | .9843 | .9832 | .9790 |
| 940 | .9886 | .9882 | .9878 | .9872 | .9862 | .9847 | .9838 | .9796 |
| 941 | .9889 | .9886 | .9882 | .9876 | .9866 | .9852 | .9842 | .9801 |
| 942 | .9893 | .9889 | .9885 | .9880 | .9870 | .9856 | .9846 | .9807 |
| 943 | .9896 | .9893 | .9889 | .9883 | .9874 | .9861 | .9851 | .9812 |
| 944 | .9900 | .9896 | .9893 | .9887 | .9878 | .9865 | .9855 | .9818 |
| 945 | .9903 | .9900 | .9896 | .9891 | .9882 | .9870 | .9859 | .9823 |
| 946 | .9906 | .9904 | .9900 | .9895 | .9887 | .9875 | .9863 | .9829 |
| 947 | .9910 | .9907 | .9904 | .9899 | .9891 | .9879 | .9867 | .9834 |
| 948 | .9913 | .9911 | .9908 | .9902 | .9895 | .9884 | .9872 | .9840 |
| 949 | .9917 | .9914 | .9911 | .9906 | .9899 | .9888 | .9876 | .9845 |
| 950 | .9920 | .9918 | .9915 | .9910 | .9903 | .9893 | .9880 | .9851 |
| 951 | .9923 | .9921 | .9918 | .9913 | .9906 | .9897 | .9884 | .9856 |
| 952 | .9926 | .9924 | .9921 | .9916 | .9910 | .9901 | .9888 | .9861 |
| 953 | .9929 | .9927 | .9924 | .9920 | .9913 | .9904 | .9892 | .9866 |
| 954 | .9932 | .9930 | .9927 | .9923 | .9917 | .9908 | .9896 | .9871 |
| 955 | .9934 | .9932 | .9930 | .9926 | .9920 | .9912 | .9900 | .9875 |
| 956 | .9937 | .9935 | .9933 | .9929 | .9924 | .9916 | .9904 | .9880 |
| 957 | .9940 | .9938 | .9936 | .9932 | .9927 | .9920 | .9908 | .9885 |
| 958 | .9943 | .9941 | .9939 | .9936 | .9931 | .9923 | .9912 | .9890 |
| 959 | .9946 | .9944 | .9942 | .9939 | .9934 | .9927 | .9916 | .9895 |
| 960 | .9949 | .9947 | .9945 | .9942 | .9938 | .9931 | .9920 | .9900 |

Spheroids lying.

| Height of the Segment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
|---|---|---|---|---|---|---|---|---|
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | ,85<br>,86<br>,87<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 961 | ·9952 | ·9950 | ·9948 | ·9945 | ·9941 | ·9935 | ·9924 | ·9904 |
| 962 | ·9954 | ·9953 | ·9951 | ·9948 | ·9945 | ·9938 | ·9929 | ·9908 |
| 963 | ·9957 | ·9956 | ·9954 | ·9951 | ·9948 | ·9942 | ·9933 | ·9913 |
| 964 | ·9960 | ·9959 | ·9957 | ·9954 | ·9951 | ·9946 | ·9937 | ·9917 |
| 965 | ·9962 | ·9961 | ·9960 | ·9957 | ·9954 | ·9949 | ·9941 | ·9921 |
| 966 | ·9965 | ·9964 | ·9963 | ·9961 | ·9958 | ·9953 | ·9946 | ·9925 |
| 967 | ·9968 | ·9967 | ·9966 | ·9964 | ·9961 | ·9957 | ·9950 | ·9929 |
| 968 | ·9971 | ·9970 | ·9969 | ·9967 | ·9964 | ·9961 | ·9954 | ·9934 |
| 969 | ·9973 | ·9973 | ·9972 | ·9970 | ·9968 | ·9964 | ·9959 | ·9938 |
| 970 | ·9976 | ·9976 | ·9975 | ·9973 | ·9971 | ·9968 | ·9963 | ·9942 |
| 971 | ·9977 | ·9977 | ·9976 | ·9974 | ·9972 | ·9969 | ·9965 | ·9945 |
| 972 | ·9978 | ·9978 | ·9977 | ·9975 | ·9974 | ·9971 | ·9966 | ·9948 |
| 973 | ·9979 | ·9979 | ·9978 | ·9977 | ·9975 | ·9972 | ·9968 | ·9952 |
| 974 | ·9980 | ·9980 | ·9979 | ·9978 | ·9976 | ·9974 | ·9970 | ·9955 |
| 975 | ·9981 | ·9981 | ·9980 | ·9979 | ·9977 | ·9975 | ·9971 | ·9958 |
| 976 | ·9983 | ·9983 | ·9982 | ·9980 | ·9979 | ·9977 | ·9973 | ·9961 |
| 977 | ·9984 | ·9984 | ·9983 | ·9981 | ·9980 | ·9978 | ·9975 | ·9964 |
| 978 | ·9985 | ·9985 | ·9984 | ·9983 | ·9981 | ·9980 | ·9977 | ·9968 |
| 979 | ·9986 | ·9986 | ·9985 | ·9984 | ·9983 | ·9981 | ·9978 | ·9971 |
| 980 | ·9987 | ·9987 | ·9986 | ·9985 | ·9984 | ·9983 | ·9980 | ·9974 |
| 981 | ·9988 | ·9988 | ·9987 | ·9986 | ·9985 | ·9984 | ·9981 | ·9976 |
| 982 | ·9989 | ·9989 | ·9988 | ·9987 | ·9986 | ·9986 | ·9983 | ·9978 |
| 983 | ,9990 | ·9990 | ·9989 | ·9988 | ·9988 | ·9987 | ·9984 | ·9980 |
| 984 | ·9991 | ·9991 | ·9990 | ·9989 | ·9989 | ·9988 | ·9986 | ·9982 |
| 985 | ·9992 | ·9992 | ·9991 | ·9990 | ·9990 | ·9989 | ·9987 | ·9984 |
| 986 | ·9993 | ·9993 | ·9992 | ·9992 | ·9991 | ·9991 | ·9988 | ·9986 |
| 987 | ·9994 | ·9994 | ·9993 | ·9993 | ·9992 | ·9992 | ·9990 | ·9988 |
| 988 | ·9995 | ·9995 | ·9994 | ·9994 | ·9994 | ·9993 | ·9992 | ·9990 |
| 989 | ·9996 | ·9996 | ·9995 | ·9995 | ·9995 | ·9995 | ·9993 | ·9992 |
| 990 | ·9997 | ·9997 | ·9996 | ·9996 | ·9996 | ·9996 | ·9995 | ·9994 |

| Spheroids lying. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Height of the Segment. | 1 Var. | 2 Var. | 3 Var. | 4 Var. | 5 Var. | 6 Var. | 7 Var. | 8 Var. |
| | ,67<br>,68<br>,69 | ,70<br>,71<br>,72<br>,73 | ,74<br>,75<br>,76 | ,77<br>,78<br>,79<br>,80 | ,81<br>,82<br>,83<br>,84 | ,85<br>,86<br>,87<br>,88 | ,89<br>,90<br>,91<br>,92 | ,93<br>,94<br>,95 |
| | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. | Seg. |
| 991 | ·9997 | ·9997 | ·9997 | ·9997 | ·9997 | ·9997 | ·9995 | ·9995 |
| 992 | ·9998 | ·9998 | ·9997 | ·9997 | ·9997 | ·9997 | ·9996 | ·9995 |
| 993 | ·9998 | ·9998 | ·9997 | ·9997 | ·9997 | ·9997 | ·9996 | ·9996 |
| 994 | ·9998 | ·9998 | ·9998 | ·9998 | ·9998 | ·9998 | ·9997 | ·9996 |
| 995 | ·9998 | ·9998 | ·9998 | ·9998 | ·9998 | ·9998 | ·9997 | ·9997 |
| 996 | ·9999 | ·9999 | ·9999 | ·9999 | ·9999 | ·9999 | ·9998 | ·9998 |
| 997 | ·9999 | ·9999 | ·9999 | ·9999 | ·9999 | ·9999 | ·9998 | ·9998 |
| 998 | ·9999 | ·9999 | ·9999 | ·9999 | ·9999 | ·9999 | ·9999 | ·9999 |
| 999 | ·9999 | ·9999 | ·9999 | ·9999 | ·9999 | ·9999 | ·9999 | ·9999 |

## EXAMPLE I.

There is a Cask whoſe Bung Diameter is 37.1, Head Diameter 27.8, wet Inches 9.1, and the Content 215 Wine gallons. Required the Quantity of Liquor in the Cask.

37.1)27.8(.75 nearly.

37.1)9.1(.245

Segment againſt 245, (in the Col. for the 3d Variety, becauſe .75 is amongſt the Numbers placed at the Top thereof,) is . . . .1688
Multiply by the Content . . . 215

Liquor in the Cask . . . 36.2920

## EXAMPLE II.

There is a Cask whoſe Bung Diameter is 35.3, Head Diameter 32.1, wet Inches 8.5, and the Content 215 Gallons. Required the Quantity of Liquor in the Cask.

35.3)32.1(.91 nearly. (7th Variety)

35.3)8.5(.241 nearly.

Segment againſt 241 of the 7th Var. is . .1778
Multiply by the Content . . . 215

Liquor in the Cask . . . 38.2270

## EXAMPLE III.

There is a Cask whoſe Bung Diameter is 35, Head Diameter 25.2, Content 177 Gallons, and the wet Inches ſuppoſed to be decreaſed from 27 to 9.6. Required the Decreaſe of Liquor.

35)25.2(.72 (2d Variety)
35)27.(.771, and 35)9.6(.274

| | |
|---|---|
| Seg. againſt 771 (in the 2d Col. of Segments) is | .8527 |
| Seg. againſt 274, is | .2004 |
| Difference | .6523 |
| Multiply by the Content | 177 |
| Decreaſe of Liquor | 116.4571 |

There is a Cask whoſe Bung Diameter is 38. Head Diameter 36.1, and the Content 215. It is required to find the Contents at every Inch of the Bung Diameter.

38)36.1(.95 (8th Variety)

Operation at 1 Inch.
38)1.00(.026

| | |
|---|---|
| Seg. againſt 26 (in the 8th Col. of Segments) is | .0045 |
| Multiply by the Content | 215 |
| Quantity in the Cask at 1 Inch | .9675 |

Operation at 2 Inches.
38)2.00(.053

| | |
|---|---|
| Segment againſt 53 is | .0166 |
| Multiply by | 215 |
| Quant. in the Cask at 2 Inches | 3.5690 |

Operation at 3 Inches.
38)3.(.079

| | |
|---|---|
| Segment againſt 79 is | .0324 |
| Multiply by | 215 |
| Quantity in the Cask at 3 Inches | 6,9660 |

After the ſame manner all the reſt of the Contents are found, as in the following Table.

| Wet in | | | |
|---|---|---|---|
| Inches. | 1000 Pts. of the B. Diam. | Segments. & Var. | Contents in Gallons. |
| 1 | 26 | .0045 | 1.0 |
| 2 | 53 | .0166 | 3.6 |
| 3 | 79 | .0324 | 7.0 |
| 4 | 105 | .0512 | 11.0 |
| 5 | 132 | .0736 | 15.8 |
| 6 | 158 | .0968 | 20.8 |
| 7 | 184 | .1217 | 26.2 |
| 8 | 211 | .1491 | 32.0 |
| 9 | 237 | .1769 | 38.0 |
| 10 | 263 | .2050 | 44.1 |
| 11 | 290 | .2363 | 50.8 |
| 12 | 316 | .2673 | 57.5 |
| 13 | 342 | .2989 | 64.3 |
| 14 | 369 | .3322 | 71.4 |
| 15 | 395 | .3651 | 78.5 |
| 16 | 421 | ,3982 | 85.6 |
| 17 | 448 | .4328 | 93.0 |
| 18 | 474 | .4664 | 100.3 |
| 19 | 500 | .5000 | 107.5 |
| 20 | | | 114.7 |
| 21 | | | 122.0 |
| 22 | | | 129.4 |
| 23 | | | 136.5 |
| 24 | | | 143.6 |
| 25 | | | 150.7 |
| 26 | | | 157.5 |
| 27 | | | 164.2 |
| 28 | | | 170.9 |
| 29 | | | 177.0 |
| 30 | | | 183.0 |
| 31 | | | 188.8 |
| 32 | | | 194.2 |
| 33 | | | 199.2 |
| 34 | | | 204.0 |
| 35 | | | 208.0 |
| 36 | | | 211.4 |
| 37 | | | 214.0 |
| 38 | | | 215.0 |

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Th

# TABLES

OF

# DIFFERENCES,

Calculated to

Every Hundredth Part of the Length.

By which the

# SEGMENTS

OF

Spheroidical CASKS ſtanding,

Are reduced to

The SEGMENTS of Casks of
leſs Curvature.

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# EXPLANATION.

THE Differences in the 1ſt Table correct the Segments of the 1ſt Var. the Differences in the 2d Table correct the Segments of the 2d Var. and the Differences in the 3d Table correct the Segments of the 3d Var. and ſo on. If the Head Diam. of any Cask be divided by the Bung Diam. the Quotient will be the Index of the diametrical Variety of that Cask, which being compared with the Numbers at the Top of the Table of Segments, will ſhew the Variety of the Segment, as has been explained before. And if the Content of any Cask be divided by its circumſcribing Cylinder, the Quotient will be the Index of the Variety of Curvature of that Cask, which being compared with the Numbers ſtanding in the ſame Row with the Index of the Diam Var. at the Top of the reſpective Table of Differences, will ſhew the Var. of the Difference. Therefore, when you have found the ſpheroidical Segment for the given Height of any Cask propoſed (by the Rule, p. 45.) turn to the reſpective Table of Differences, and the Index of the Variety of Curvature of the propoſed Cask, or the neareſt Number to it, being found at the Top thereof, againſt the Index of the Diam. Var. of the ſame Cask; take the Difference (of the Variety thus determined) ſtanding againſt the given Height, which being added to or ſubſtracted from the ſpheroidical Segment, according as the Table directs, in the 2d Col. of each Page, will give the true Segment for the Cask propoſed. The Examples following the Tables will more fully explain and illuſtrate their Uſe.

Note, The Differ. of the 1 Var. in each Table are calculated exactly for conical Fruſtums, and the Differ. of the 2d Var. for the Fruſtums of parabolic Conoids, and the Indexes of the Var. of Curvature in the 22d Column of each Table are calculated for ſpheroidical Fruſtums.

Note alſo, That the Differences are expreſſed in Ten thouſandth Parts of the Cask's Content.

Tab. 1. For Stand. Casks of the 1 Diam. Variety.

| Indexes of the 1 Diam Var. | | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 Var | 2 Var | 3 Var | 4 Var | 5 Var | 6 Var | 7 Var | 8 Var | 9 Var | 10 Var | 11 Var |
| 67 | | 706 | 724 | 729 | 734 | 738 | 743 | 747 | 752 | 757 | 761 | 766 |
| 68 | | 714 | 731 | 736 | 740 | 745 | 749 | 754 | 758 | 763 | 767 | 771 |
| 69 | | 722 | 738 | 742 | 747 | 751 | 756 | 760 | 764 | 769 | 773 | 777 |
| Height of the Segment. | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif |
| 1 | add | 7 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 3 | 3 | 3 |
| 2 | add | 14 | 11 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 |
| 3 | add | 20 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 | 10 | 9 |
| 4 | add | 24 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 |
| 5 | add | 27 | 21 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 |
| 6 | add | 27 | 21 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 |
| 7 | add | 28 | 21 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 |
| 8 | add | 28 | 21 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 |
| 9 | add | 24 | 18 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 |
| 10 | add | 23 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 | 9 |
| 11 | add | 22 | 15 | 14 | 14 | 13 | 12 | 11 | 11 | 10 | 9 | 8 |
| 12 | add | 19 | 12 | 11 | 11 | 10 | 10 | 9 | 8 | 8 | 7 | 7 |
| 13 | add | 13 | 7 | 7 | 6 | 6 | 6 | 5 | 5 | 5 | 4 | 4 |
| 14 | add | 7 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 |
| 15 | add | 4 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 16 | ſub | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 3 | 3 | 3 |
| 17 | ſub | 12 | 12 | 11 | 11 | 10 | 10 | 9 | 8 | 8 | 7 | 7 |
| 18 | ſub | 17 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 | 9 |
| 19 | ſub | 22 | 21 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 |
| 20 | ſub | 30 | 28 | 27 | 25 | 24 | 22 | 21 | 20 | 18 | 17 | 15 |
| 21 | ſub | 37 | 33 | 31 | 30 | 28 | 26 | 25 | 23 | 21 | 20 | 18 |
| 22 | ſub | 45 | 40 | 38 | 36 | 34 | 32 | 30 | 28 | 26 | 24 | 22 |
| 23 | ſub | 52 | 45 | 43 | 41 | 38 | 36 | 34 | 32 | 29 | 27 | 25 |
| 24 | ſub | 59 | 51 | 48 | 46 | 43 | 41 | 38 | 36 | 33 | 31 | 28 |
| 25 | ſub | 65 | 57 | 54 | 51 | 48 | 46 | 43 | 40 | 37 | 34 | 31 |

### Tab. 1. For Stand. Casks of the 1 Diam. Variety.

| Indexes of the 1 Diam Var. | | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 12 Var | 13 Var | 14 Var | 15 Var | 16 Var | 17 Var | 18 Var | 19 Var | 20 Var | 21 Var | 22 Var |
| 67 | | 770 | 775 | 780 | 784 | 789 | 793 | 798 | 803 | 807 | 812 | 816 |
| 68 | | 776 | 780 | 785 | 789 | 794 | 798 | 803 | 807 | 812 | 816 | 821 |
| 69 | | 782 | 786 | 790 | 795 | 799 | 803 | 808 | 812 | 817 | 821 | 825 |
| Height of the Segment. | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | |
| 1 | add | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | | |
| 2 | add | 6 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | |
| 3 | add | 8 | 7 | 6 | 6 | 5 | 4 | 3 | 2 | 2 | 1 | |
| 4 | add | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 5 | add | 11 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 6 | add | 11 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 7 | add | 11 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 8 | add | 11 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 9 | add | 9 | 8 | 7 | 6 | 5 | 5 | 4 | 3 | 2 | 1 | |
| 10 | add | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 3 | 2 | 1 | |
| 11 | add | 8 | 7 | 6 | 5 | 5 | 4 | 3 | 2 | 2 | 1 | |
| 12 | add | 6 | 5 | 5 | 4 | 4 | 3 | 2 | 2 | 1 | 1 | |
| 13 | add | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 | | |
| 14 | add | 2 | 1 | 1 | 1 | 1 | 1 | 1 | | | | |
| 15 | add | 1 | 1 | | | | | | | | | |
| 16 | ſub | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | | |
| 17 | ſub | 6 | 5 | 5 | 4 | 4 | 3 | 2 | 2 | 1 | 1 | |
| 18 | ſub | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 3 | 2 | 1 | |
| 19 | ſub | 11 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 20 | ſub | 14 | 13 | 11 | 10 | 8 | 7 | 6 | 4 | 3 | 1 | |
| 21 | ſub | 17 | 15 | 13 | 12 | 10 | 8 | 7 | 5 | 3 | 2 | |
| 22 | ſub | 20 | 18 | 16 | 14 | 12 | 10 | 8 | 6 | 4 | 2 | |
| 23 | ſub | 23 | 20 | 18 | 16 | 14 | 11 | 9 | 7 | 5 | 2 | |
| 24 | ſub | 26 | 23 | 20 | 18 | 15 | 13 | 10 | 8 | 5 | 3 | |
| 25 | ſub | 29 | 26 | 23 | 20 | 17 | 14 | 11 | 6 | 6 | 3 | |

Tab. 1. For Stand. Casks of the 1 Diam. Variety.

| Indexes of the 1 Diam Var. | | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 Var | 2 Var | 3 Var | 4 Var | 5 Var | 6 Var | 7 Var | 8 Var | 9 Var | 10 Var | 11 Var |
| 67 | | 706 | 724 | 729 | 734 | 738 | 743 | 747 | 752 | 757 | 761 | 766 |
| 68 | | 714 | 731 | 736 | 740 | 745 | 749 | 754 | 758 | 763 | 767 | 771 |
| 69 | | 722 | 738 | 742 | 747 | 751 | 756 | 760 | 764 | 769 | 773 | 777 |
| Height of the Segment. | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif |
| 26 | ſub | 70 | 62 | 59 | 56 | 53 | 50 | 47 | 43 | 40 | 37 | 34 |
| 27 | ſub | 80 | 68 | 65 | 61 | 58 | 54 | 52 | 48 | 44 | 41 | 37 |
| 28 | ſub | 87 | 74 | 70 | 67 | 63 | 59 | 56 | 52 | 48 | 44 | 41 |
| 29 | ſub | 92 | 77 | 73 | 69 | 65 | 62 | 58 | 54 | 50 | 46 | 42 |
| 30 | ſub | 97 | 79 | 75 | 71 | 67 | 63 | 59 | 55 | 51 | 47 | 43 |
| 31 | ſub | 100 | 84 | 80 | 76 | 71 | 67 | 63 | 59 | 55 | 50 | 46 |
| 32 | ſub | 105 | 88 | 84 | 79 | 75 | 70 | 66 | 62 | 57 | 53 | 48 |
| 33 | ſub | 110 | 92 | 87 | 83 | 78 | 74 | 69 | 64 | 60 | 55 | 51 |
| 34 | ſub | 111 | 92 | 87 | 83 | 78 | 74 | 69 | 64 | 60 | 55 | 51 |
| 35 | ſub | 113 | 94 | 89 | 85 | 80 | 75 | 71 | 66 | 61 | 56 | 52 |
| 36 | ſub | 115 | 96 | 91 | 86 | 82 | 77 | 72 | 67 | 62 | 58 | 53 |
| 37 | ſub | 115 | 96 | 91 | 86 | 82 | 77 | 72 | 67 | 62 | 58 | 53 |
| 38 | ſub | 114 | 95 | 90 | 86 | 81 | 76 | 71 | 67 | 62 | 57 | 52 |
| 39 | ſub | 111 | 92 | 87 | 83 | 78 | 74 | 69 | 64 | 60 | 55 | 51 |
| 40 | ſub | 108 | 90 | 86 | 81 | 77 | 72 | 68 | 63 | 59 | 54 | 50 |
| 41 | ſub | 104 | 86 | 82 | 77 | 72 | 69 | 65 | 60 | 56 | 52 | 47 |
| 42 | ſub | 96 | 82 | 78 | 74 | 70 | 66 | 62 | 57 | 53 | 49 | 45 |
| 43 | ſub | 91 | 75 | 71 | 68 | 64 | 60 | 56 | 53 | 49 | 45 | 41 |
| 44 | ſub | 83 | 69 | 66 | 62 | 59 | 55 | 52 | 48 | 45 | 41 | 38 |
| 45 | ſub | 73 | 60 | 57 | 54 | 51 | 48 | 45 | 42 | 39 | 36 | 33 |
| 46 | ſub | 62 | 50 | 48 | 45 | 43 | 40 | 38 | 35 | 33 | 30 | 28 |
| 47 | ſub | 49 | 41 | 39 | 37 | 35 | 33 | 31 | 29 | 27 | 25 | 23 |
| 48 | ſub | 35 | 28 | 27 | 25 | 24 | 22 | 21 | 20 | 18 | 17 | 15 |
| 49 | ſub | 19 | 15 | 14 | 14 | 13 | 12 | 11 | 11 | 10 | 9 | 8 |

Tab. 1. For Stand. Casks of the 1 Diam. Variety.

| Indexes of the 1 Diam Var. | | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 12 Var | 13 Var | 14 Var | 15 Var | 16 Var | 17 Var | 18 Var | 19 Var | 20 Var | 21 Var | 22 Var |
| 67 | | 770 | 775 | 780 | 784 | 789 | 793 | 798 | 803 | 807 | 812 | 816 |
| 68 | | 776 | 780 | 785 | 789 | 794 | 798 | 803 | 807 | 812 | 816 | 821 |
| 69 | | 782 | 786 | 790 | 795 | 799 | 803 | 808 | 812 | 817 | 821 | 825 |
| Height of the Segment. | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | |
| 26 | ſub | 31 | 28 | 25 | 22 | 19 | 16 | 12 | 9 | 6 | 3 | |
| 27 | ſub | 34 | 31 | 27 | 24 | 20 | 17 | 14 | 10 | 7 | 3 | |
| 28 | ſub | 37 | 33 | 30 | 26 | 22 | 19 | 15 | 11 | 7 | 4 | |
| 29 | ſub | 39 | 35 | 31 | 27 | 23 | 19 | 15 | 12 | 8 | 4 | |
| 30 | ſub | 40 | 36 | 32 | 28 | 24 | 20 | 16 | 12 | 8 | 4 | |
| 31 | ſub | 42 | 38 | 34 | 29 | 25 | 21 | 17 | 13 | 8 | 4 | |
| 32 | ſub | 44 | 40 | 35 | 31 | 26 | 22 | 18 | 13 | 9 | 4 | |
| 33 | ſub | 46 | 41 | 37 | 32 | 28 | 23 | 18 | 14 | 9 | 5 | |
| 34 | ſub | 46 | 41 | 37 | 32 | 28 | 23 | 18 | 14 | 9 | 5 | |
| 35 | ſub | 47 | 42 | 38 | 33 | 28 | 24 | 19 | 14 | 9 | 5 | |
| 36 | ſub | 48 | 43 | 38 | 34 | 29 | 24 | 19 | 14 | 10 | 5 | |
| 37 | ſub | 48 | 43 | 38 | 34 | 29 | 24 | 19 | 14 | 10 | 5 | |
| 38 | ſub | 48 | 43 | 38 | 33 | 29 | 24 | 19 | 14 | 10 | 5 | |
| 39 | ſub | 46 | 41 | 37 | 32 | 28 | 23 | 18 | 14 | 9 | 5 | |
| 40 | ſub | 45 | 41 | 36 | 32 | 27 | 23 | 18 | 14 | 9 | 5 | |
| 41 | ſub | 43 | 39 | 34 | 30 | 26 | 22 | 17 | 13 | 9 | 4 | |
| 42 | ſub | 41 | 37 | 33 | 29 | 25 | 21 | 16 | 12 | 8 | 4 | |
| 43 | ſub | 38 | 34 | 30 | 26 | 23 | 19 | 15 | 11 | 8 | 4 | |
| 44 | ſub | 35 | 31 | 28 | 24 | 21 | 17 | 14 | 10 | 7 | 3 | |
| 45 | ſub | 30 | 27 | 24 | 21 | 18 | 15 | 12 | 9 | 6 | 3 | |
| 46 | ſub | 25 | 23 | 20 | 18 | 15 | 13 | 10 | 8 | 5 | 3 | |
| 47 | ſub | 21 | 18 | 16 | 14 | 12 | 10 | 8 | 6 | 4 | 2 | |
| 48 | ſub | 14 | 13 | 11 | 10 | 8 | 7 | 6 | 4 | 3 | 1 | |
| 49 | ſub | 8 | 7 | 6 | 5 | 5 | 4 | 3 | 2 | 2 | 1 | |

### Tab. 1. For Stand. Casks of the 1 Diam. Variety.

| Indexes of the 1 Diam Var. | | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 Var | 2 Var | 3 Var | 4 Var | 5 Var | 6 Var | 7 Var | 8 Var | 9 Var | 10 Var | 11 Var |
| 67 | | 706 | 724 | 729 | 734 | 738 | 743 | 747 | 752 | 757 | 761 | 766 |
| 68 | | 714 | 731 | 736 | 740 | 745 | 749 | 754 | 758 | 763 | 767 | 771 |
| 69 | | 722 | 738 | 742 | 747 | 751 | 756 | 760 | 764 | 769 | 773 | 777 |
| Height of the Segment. | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif |
| 51 | add | 19 | 15 | 14 | 14 | 13 | 12 | 11 | 11 | 10 | 9 | 8 |
| 52 | add | 35 | 28 | 27 | 25 | 24 | 22 | 21 | 20 | 18 | 17 | 15 |
| 53 | add | 49 | 41 | 39 | 37 | 35 | 33 | 31 | 29 | 27 | 25 | 23 |
| 54 | add | 62 | 50 | 48 | 45 | 43 | 40 | 38 | 35 | 33 | 30 | 28 |
| 55 | add | 73 | 60 | 57 | 54 | 51 | 48 | 45 | 42 | 39 | 36 | 33 |
| 56 | add | 83 | 69 | 66 | 62 | 59 | 55 | 52 | 48 | 45 | 41 | 38 |
| 57 | add | 91 | 75 | 71 | 68 | 64 | 60 | 56 | 53 | 49 | 45 | 41 |
| 58 | add | 96 | 82 | 78 | 74 | 70 | 66 | 62 | 57 | 53 | 49 | 45 |
| 59 | add | 104 | 86 | 82 | 77 | 72 | 69 | 65 | 60 | 56 | 52 | 47 |
| 60 | add | 108 | 90 | 86 | 81 | 77 | 72 | 68 | 63 | 59 | 54 | 50 |
| 61 | add | 111 | 92 | 87 | 83 | 78 | 74 | 69 | 64 | 60 | 55 | 51 |
| 62 | add | 114 | 95 | 90 | 86 | 81 | 76 | 71 | 67 | 62 | 57 | 52 |
| 63 | add | 115 | 96 | 91 | 86 | 82 | 77 | 72 | 67 | 62 | 58 | 53 |
| 64 | add | 115 | 96 | 91 | 86 | 82 | 77 | 72 | 67 | 62 | 58 | 53 |
| 65 | add | 113 | 94 | 89 | 85 | 80 | 75 | 71 | 66 | 61 | 56 | 52 |
| 66 | add | 111 | 92 | 87 | 83 | 78 | 74 | 69 | 64 | 60 | 55 | 51 |
| 67 | add | 110 | 92 | 87 | 83 | 78 | 74 | 69 | 64 | 60 | 55 | 51 |
| 68 | add | 105 | 88 | 84 | 79 | 75 | 70 | 66 | 62 | 57 | 53 | 48 |
| 69 | add | 100 | 84 | 80 | 76 | 71 | 67 | 63 | 59 | 55 | 50 | 46 |
| 70 | add | 97 | 79 | 75 | 71 | 67 | 63 | 59 | 55 | 51 | 47 | 43 |
| 71 | add | 92 | 77 | 73 | 69 | 65 | 62 | 58 | 54 | 50 | 46 | 42 |
| 72 | add | 87 | 74 | 70 | 67 | 63 | 59 | 56 | 52 | 48 | 44 | 41 |
| 73 | add | 80 | 68 | 65 | 61 | 58 | 54 | 52 | 48 | 44 | 41 | 37 |
| 74 | add | 70 | 62 | 59 | 56 | 53 | 50 | 47 | 43 | 40 | 37 | 34 |
| 75 | add | 65 | 57 | 54 | 51 | 48 | 46 | 43 | 40 | 37 | 34 | 31 |

Tab. 1. For Stand. Casks of the 1 Diam. Variety.

| Indexes of the 1 Diam Var. | | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 12 Var | 13 Var | 14 Var | 15 Var | 16 Var | 17 Var. | 18 Var | 19 Var | 20 Var | 21 Var | 22 Var |
| 67 | | 770 | 775 | 780 | 784 | 789 | 793 | 798 | 803 | 807 | 812 | 816 |
| 68 | | 776 | 780 | 785 | 789 | 794 | 798 | 803 | 807 | 812 | 816 | 821 |
| 69 | | 782 | 786 | 790 | 795 | 799 | 803 | 808 | 812 | 817 | 821 | 825 |
| Height of the Segment. | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | |
| 51 | add | 8 | 7 | 6 | 5 | 5 | 4 | 3 | 2 | 2 | 1 | |
| 52 | add | 14 | 13 | 11 | 10 | 8 | 7 | 6 | 4 | 3 | 1 | |
| 53 | add | 21 | 18 | 16 | 14 | 12 | 10 | 8 | 6 | 4 | 2 | |
| 54 | add | 25 | 23 | 20 | 18 | 15 | 13 | 10 | 8 | 5 | 3 | |
| 55 | add | 30 | 27 | 24 | 21 | 18 | 15 | 12 | 9 | 6 | 3 | |
| 56 | add | 35 | 31 | 28 | 24 | 21 | 17 | 14 | 10 | 7 | 3 | |
| 57 | add | 38 | 34 | 30 | 26 | 23 | 19 | 15 | 11 | 8 | 4 | |
| 58 | add | 41 | 37 | 33 | 29 | 25 | 21 | 16 | 12 | 8 | 4 | |
| 59 | add | 43 | 39 | 34 | 30 | 26 | 22 | 17 | 13 | 9 | 4 | |
| 60 | add | 45 | 41 | 36 | 32 | 27 | 23 | 18 | 14 | 9 | 5 | |
| 61 | add | 46 | 41 | 37 | 32 | 28 | 23 | 18 | 14 | 9 | 5 | |
| 62 | add | 48 | 43 | 38 | 33 | 29 | 24 | 19 | 14 | 10 | 5 | |
| 63 | add | 48 | 43 | 38 | 34 | 29 | 24 | 19 | 14 | 10 | 5 | |
| 64 | add | 48 | 43 | 38 | 34 | 29 | 24 | 19 | 14 | 10 | 5 | |
| 65 | add | 47 | 42 | 38 | 33 | 28 | 24 | 19 | 14 | 9 | 5 | |
| 66 | add | 46 | 41 | 37 | 32 | 28 | 23 | 18 | 14 | 9 | 5 | |
| 67 | add | 46 | 41 | 37 | 32 | 28 | 23 | 18 | 14 | 9 | 5 | |
| 68 | add | 44 | 40 | 35 | 31 | 26 | 22 | 18 | 13 | 9 | 4 | |
| 69 | add | 42 | 38 | 34 | 29 | 25 | 21 | 17 | 13 | 8 | 4 | |
| 70 | add | 40 | 36 | 32 | 28 | 24 | 20 | 16 | 12 | 8 | 4 | |
| 71 | add | 39 | 35 | 31 | 27 | 23 | 19 | 15 | 12 | 8 | 4 | |
| 72 | add | 37 | 33 | 30 | 26 | 22 | 19 | 15 | 11 | 7 | 4 | |
| 73 | add | 34 | 31 | 27 | 24 | 20 | 17 | 14 | 10 | 7 | 3 | |
| 74 | add | 31 | 28 | 25 | 22 | 19 | 16 | 12 | 9 | 6 | 3 | |
| 75 | add | 29 | 26 | 23 | 20 | 17 | 14 | 11 | 9 | 6 | 3 | |

Tab. 1. For Stand. Casks of the 1 Diam. Variety.

| Indexes of the 1 Diam Var. | | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 Var | 2 Var | 3 Var | 4 Var | 5 Var | 6 Var | 7 Var | 8 Var | 9 Var | 10 Var | 11 Var |
| 67 | | 706 | 724 | 729 | 734 | 738 | 743 | 747 | 752 | 757 | 761 | 766 |
| 68 | | 714 | 731 | 736 | 740 | 745 | 749 | 754 | 758 | 763 | 767 | 771 |
| 69 | | 722 | 738 | 742 | 747 | 751 | 756 | 760 | 764 | 769 | 773 | 777 |
| Height of the Segment. | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif |
| 76 | add | 59 | 51 | 48 | 46 | 43 | 41 | 38 | 36 | 33 | 31 | 28 |
| 77 | add | 52 | 45 | 43 | 41 | 38 | 36 | 34 | 32 | 29 | 27 | 25 |
| 78 | add | 45 | 40 | 38 | 36 | 34 | 32 | 30 | 28 | 26 | 24 | 22 |
| 79 | add | 37 | 33 | 31 | 30 | 28 | 26 | 25 | 23 | 21 | 20 | 18 |
| 80 | add | 30 | 28 | 27 | 25 | 24 | 22 | 21 | 20 | 18 | 17 | 15 |
| 81 | add | 22 | 21 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 |
| 82 | add | 17 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 | 9 |
| 83 | add | 12 | 12 | 11 | 11 | 10 | 10 | 9 | 8 | 8 | 7 | 7 |
| 84 | add | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 3 | 3 | 3 |
| 85 | ſub | 4 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 86 | ſub | 7 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 |
| 87 | ſub | 13 | 7 | 7 | 6 | 6 | 6 | 5 | 5 | 5 | 4 | 4 |
| 88 | ſub | 19 | 12 | 11 | 11 | 10 | 10 | 9 | 8 | 8 | 7 | 7 |
| 89 | ſub | 22 | 15 | 14 | 14 | 13 | 12 | 11 | 11 | 10 | 9 | 8 |
| 90 | ſub | 23 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 | 9 |
| 91 | ſub | 24 | 18 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 |
| 92 | ſub | 28 | 21 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 |
| 93 | ſub | 28 | 21 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 |
| 94 | ſub | 27 | 21 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 |
| 95 | ſub | 27 | 21 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 |
| 96 | ſub | 24 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 |
| 97 | ſub | 20 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 | 10 | 9 |
| 98 | ſub | 14 | 11 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 |
| 99 | ſub | 7 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 3 | 3 | 3 |

## Tab. 1. For Stand. Casks of the 1 Diam. Variety.

| Indexes of the 1 Diam Var. | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 12 Var | 13 Var | 14 Var | 15 Var | 16 Var | 17 Var | 18 Var | 19 Var | 20 Var | 21 Var | 22 Var |
| 67 | 770 | 775 | 780 | 784 | 789 | 793 | 798 | 803 | 807 | 812 | 816 |
| 68 | 776 | 780 | 785 | 789 | 794 | 798 | 803 | 807 | 812 | 816 | 821 |
| 69 | 782 | 786 | 790 | 795 | 799 | 803 | 808 | 812 | 817 | 821 | 825 |

| Height of the Segment. | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 76 | add | 26 | 23 | 20 | 18 | 15 | 13 | 10 | 8 | 5 | 3 |
| 77 | add | 23 | 20 | 18 | 16 | 14 | 11 | 9 | 7 | 5 | 2 |
| 78 | add | 20 | 18 | 16 | 14 | 12 | 10 | 8 | 6 | 4 | 2 |
| 79 | add | 17 | 15 | 13 | 12 | 10 | 8 | 7 | 5 | 3 | 2 |
| 80 | add | 14 | 13 | 11 | 10 | 8 | 7 | 6 | 4 | 3 | 1 |
| 81 | add | 11 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 82 | add | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 3 | 2 | 1 |
| 83 | add | 6 | 5 | 5 | 4 | 4 | 3 | 2 | 2 | 1 | 1 |
| 84 | add | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | |
| 85 | ſub | 1 | 1 | | | | | | | | |
| 86 | ſub | 2 | 1 | 1 | 1 | 1 | 1 | 1 | | | |
| 87 | ſub | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 | |
| 88 | ſub | 6 | 5 | 5 | 4 | 4 | 3 | 2 | 2 | 1 | 1 |
| 89 | ſub | 8 | 7 | 6 | 5 | 5 | 4 | 3 | 2 | 2 | 1 |
| 90 | ſub | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 3 | 2 | 1 |
| 91 | ſub | 9 | 8 | 7 | 6 | 5 | 5 | 4 | 3 | 2 | 1 |
| 92 | ſub | 11 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 93 | ſub | 11 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 94 | ſub | 11 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 95 | ſub | 11 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 96 | ſub | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 97 | ſub | 8 | 7 | 6 | 6 | 5 | 4 | 3 | 2 | 2 | 1 |
| 98 | ſub | 6 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 |
| 99 | ſub | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | |

Tab. 2. For Stand. Casks of the 2 Diam. Variety.

| Indexes of the 2 Diam Var. | | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 Var | 2 Var | 3 Var | 4 Var | 5 Var | 6 Var | 7 Var | 8 Var | 9 Var | 10 Var | 11 Var |
| 70 | | 730 | 745 | 749 | 753 | 758 | 762 | 766 | 770 | 775 | 779 | 783 |
| 71 | | 738 | 752 | 756 | 760 | 764 | 769 | 773 | 777 | 781 | 785 | 790 |
| 72 | | 746 | 759 | 763 | 767 | 771 | 775 | 779 | 783 | 787 | 791 | 795 |
| 73 | | 754 | 766 | 770 | 774 | 778 | 782 | 786 | 789 | 793 | 797 | 801 |
| Height of the Seg. | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif |
| 1 | add | 6 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 3 | 3 | 3 |
| 2 | add | 14 | 11 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 |
| 3 | add | 20 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 | 10 | 9 |
| 4 | add | 23 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 |
| 5 | add | 26 | 21 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 |
| 6 | add | 26 | 21 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 |
| 7 | add | 28 | 23 | 22 | 21 | 20 | 18 | 17 | 16 | 15 | 14 | 13 |
| 8 | add | 28 | 24 | 23 | 22 | 20 | 19 | 18 | 17 | 16 | 14 | 13 |
| 9 | add | 26 | 21 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 |
| 10 | add | 26 | 21 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 |
| 11 | add | 24 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 |
| 12 | add | 22 | 18 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 |
| 13 | add | 16 | 13 | 12 | 12 | 11 | 10 | 10 | 9 | 8 | 8 | 7 |
| 14 | add | 13 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 6 |
| 15 | add | 8 | 7 | 7 | 6 | 6 | 6 | 5 | 5 | 5 | 4 | 4 |
| 16 | add | 4 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 |
| 17 | ſub | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 |
| 18 | ſub | 7 | 6 | 6 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 3 |
| 19 | ſub | 12 | 11 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 |
| 20 | ſub | 19 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 | 10 | 9 |
| 21 | ſub | 23 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 |
| 22 | ſub | 32 | 26 | 25 | 23 | 22 | 21 | 20 | 18 | 17 | 16 | 14 |
| 23 | ſub | 38 | 32 | 30 | 29 | 27 | 26 | 24 | 22 | 21 | 19 | 18 |
| 24 | ſub | 44 | 36 | 34 | 32 | 31 | 29 | 27 | 25 | 23 | 22 | 20 |
| 25 | ſub | 49 | 40 | 38 | 36 | 34 | 32 | 30 | 28 | 26 | 24 | 22 |

## Tab. 2. For Stand. Casks of the 2 Diam. Variety.

| Indexes of the 2 Diam Var. | | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 12 Var | 13 Var | 14 Var | 15 Var | 16 Var | 17 Var | 18 Var | 19 Var | 20 Var | 21 Var | 22 Var |
| 70 | | 787 | 792 | 796 | 800 | 804 | 809 | 813 | 817 | 821 | 826 | 830 |
| 71 | | 794 | 798 | 802 | 806 | 810 | 815 | 819 | 823 | 827 | 831 | 835 |
| 72 | | 799 | 803 | 807 | 811 | 815 | 819 | 823 | 827 | 831 | 835 | 839 |
| 73 | | 805 | 809 | 813 | 817 | 821 | 825 | 828 | 832 | 836 | 840 | 844 |
| Height of the Seg. | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | |
| 1 | add | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | | |
| 2 | add | 6 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | |
| 3 | add | 8 | 7 | 6 | 6 | 5 | 4 | 3 | 2 | 2 | 1 | |
| 4 | add | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 5 | add | 11 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 6 | add | 11 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 7 | add | 12 | 10 | 9 | 8 | 7 | 6 | 5 | 3 | 2 | 1 | |
| 8 | add | 12 | 11 | 10 | 8 | 7 | 6 | 5 | 4 | 2 | 1 | |
| 9 | add | 11 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 10 | add | 11 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 11 | add | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 12 | add | 9 | 8 | 7 | 6 | 5 | 5 | 3 | 3 | 2 | 1 | |
| 13 | add | 7 | 6 | 5 | 5 | 4 | 3 | 3 | 2 | 1 | 1 | |
| 14 | add | 5 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | |
| 15 | add | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 | | |
| 16 | add | 2 | 1 | 1 | 1 | 1 | 1 | 1 | | | | |
| 17 | ſub | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 18 | ſub | 3 | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | | |
| 19 | ſub | 6 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | |
| 20 | ſub | 8 | 7 | 6 | 6 | 5 | 4 | 3 | 2 | 2 | 1 | |
| 21 | ſub | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 22 | ſub | 13 | 12 | 10 | 9 | 8 | 7 | 5 | 4 | 3 | 1 | |
| 23 | ſub | 16 | 14 | 13 | 11 | 10 | 8 | 6 | 5 | 3 | 2 | |
| 24 | ſub | 18 | 16 | 14 | 13 | 11 | 9 | 7 | 5 | 4 | 2 | |
| 25 | ſub | 20 | 18 | 16 | 14 | 12 | 10 | 8 | 6 | 4 | 2 | |

### Tab. 2. For Stand. Casks of the 2 Diam. Variety.

| Indexes of the 2 Diam Var. | | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 Var | 2 Var | 3 Var | 4 Var | 5 Var | 6 Var | 7 Var | 8 Var | 9 Var | 10 Var | 11 Var |
| 70 | | 730 | 745 | 749 | 753 | 758 | 762 | 766 | 770 | 775 | 779 | 783 |
| 71 | | 738 | 752 | 756 | 760 | 764 | 769 | 773 | 777 | 781 | 785 | 790 |
| 72 | | 746 | 759 | 763 | 767 | 771 | 775 | 779 | 783 | 787 | 791 | 795 |
| 73 | | 754 | 766 | 770 | 774 | 778 | 782 | 786 | 789 | 793 | 797 | 801 |
| Height of the Seg. | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif |
| 26 | ſub | 56 | 46 | 44 | 41 | 39 | 37 | 35 | 32 | 30 | 28 | 25 |
| 27 | ſub | 62 | 52 | 49 | 47 | 44 | 42 | 39 | 36 | 34 | 31 | 29 |
| 28 | ſub | 70 | 57 | 54 | 51 | 48 | 46 | 43 | 40 | 37 | 34 | 31 |
| 29 | ſub | 71 | 59 | 56 | 53 | 50 | 47 | 44 | 41 | 38 | 35 | 32 |
| 30 | ſub | 74 | 63 | 60 | 57 | 54 | 50 | 47 | 44 | 41 | 38 | 35 |
| 31 | ſub | 80 | 66 | 63 | 59 | 56 | 53 | 50 | 46 | 43 | 40 | 36 |
| 32 | ſub | 82 | 69 | 66 | 62 | 59 | 55 | 52 | 48 | 45 | 41 | 38 |
| 33 | ſub | 87 | 73 | 69 | 66 | 62 | 58 | 55 | 51 | 47 | 44 | 40 |
| 34 | ſub | 88 | 74 | 70 | 67 | 63 | 59 | 56 | 52 | 48 | 44 | 41 |
| 35 | ſub | 90 | 76 | 72 | 68 | 65 | 61 | 57 | 53 | 49 | 46 | 42 |
| 36 | ſub | 93 | 78 | 74 | 70 | 66 | 62 | 59 | 55 | 51 | 47 | 43 |
| 37 | ſub | 93 | 78 | 74 | 70 | 66 | 62 | 59 | 55 | 51 | 47 | 43 |
| 38 | ſub | 91 | 77 | 73 | 69 | 65 | 62 | 58 | 54 | 50 | 46 | 42 |
| 39 | ſub | 90 | 76 | 72 | 68 | 65 | 61 | 57 | 53 | 49 | 46 | 42 |
| 40 | ſub | 88 | 75 | 71 | 68 | 64 | 60 | 56 | 53 | 49 | 45 | 41 |
| 41 | ſub | 84 | 72 | 68 | 65 | 61 | 58 | 54 | 50 | 47 | 43 | 40 |
| 42 | ſub | 79 | 68 | 65 | 61 | 58 | 54 | 52 | 48 | 44 | 41 | 37 |
| 43 | ſub | 73 | 62 | 59 | 56 | 53 | 50 | 47 | 43 | 40 | 37 | 34 |
| 44 | ſub | 67 | 58 | 55 | 52 | 49 | 46 | 44 | 41 | 38 | 35 | 32 |
| 45 | ſub | 59 | 50 | 48 | 45 | 43 | 40 | 38 | 35 | 33 | 30 | 28 |
| 46 | ſub | 50 | 43 | 41 | 39 | 37 | 34 | 32 | 30 | 28 | 26 | 24 |
| 47 | ſub | 42 | 35 | 33 | 32 | 30 | 28 | 26 | 25 | 23 | 21 | 19 |
| 48 | ſub | 28 | 24 | 23 | 22 | 20 | 19 | 18 | 17 | 16 | 14 | 13 |
| 49 | ſub | 16 | 13 | 12 | 12 | 11 | 10 | 10 | 9 | 8 | 8 | 7 |

Tab. 2. For Stand. Casks of the 2 Diam. Variety.

| Indexes of the 2 Diam Var. | | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 12 Var | 13 Var | 14 Var | 15 Var | 16 Var | 17 Var | 18 Var | 19 Var | 20 Var | 21 Var | 22 Var |
| 70 | | 787 | 792 | 796 | 800 | 804 | 809 | 813 | 817 | 821 | 826 | 830 |
| 71 | | 794 | 798 | 802 | 806 | 810 | 815 | 819 | 823 | 827 | 831 | 835 |
| 72 | | 799 | 803 | 807 | 811 | 815 | 819 | 823 | 827 | 831 | 835 | 839 |
| 73 | | 805 | 809 | 813 | 817 | 821 | 825 | 828 | 832 | 836 | 840 | 844 |
| Height of the Seg. | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | |
| 26 | ſub | 23 | 21 | 18 | 16 | 14 | 12 | 9 | 7 | 5 | 2 | |
| 27 | ſub | 26 | 23 | 21 | 18 | 16 | 13 | 10 | 8 | 5 | 3 | |
| 28 | ſub | 29 | 26 | 23 | 20 | 17 | 14 | 11 | 9 | 6 | 3 | |
| 29 | ſub | 30 | 27 | 24 | 21 | 18 | 15 | 12 | 9 | 6 | 3 | |
| 30 | ſub | 32 | 28 | 25 | 22 | 19 | 16 | 13 | 9 | 6 | 3 | |
| 31 | ſub | 33 | 30 | 26 | 23 | 20 | 17 | 13 | 10 | 7 | 3 | |
| 32 | ſub | 35 | 31 | 28 | 24 | 21 | 17 | 14 | 10 | 7 | 3 | |
| 33 | ſub | 37 | 33 | 29 | 26 | 22 | 18 | 15 | 11 | 7 | 4 | |
| 34 | ſub | 37 | 33 | 30 | 26 | 22 | 19 | 15 | 11 | 7 | 4 | |
| 35 | ſub | 38 | 34 | 30 | 27 | 23 | 19 | 15 | 11 | 8 | 4 | |
| 36 | ſub | 39 | 35 | 31 | 27 | 23 | 20 | 16 | 12 | 8 | 4 | |
| 37 | ſub | 39 | 35 | 31 | 27 | 23 | 20 | 16 | 12 | 8 | 4 | |
| 38 | ſub | 39 | 35 | 31 | 27 | 23 | 19 | 15 | 12 | 8 | 4 | |
| 39 | ſub | 38 | 34 | 30 | 27 | 23 | 19 | 15 | 11 | 8 | 4 | |
| 40 | ſub | 38 | 34 | 30 | 26 | 23 | 19 | 15 | 11 | 8 | 4 | |
| 41 | ſub | 36 | 32 | 29 | 25 | 22 | 18 | 14 | 11 | 7 | 4 | |
| 42 | ſub | 34 | 31 | 27 | 24 | 20 | 17 | 14 | 10 | 7 | 3 | |
| 43 | ſub | 31 | 28 | 25 | 22 | 19 | 16 | 12 | 9 | 6 | 3 | |
| 44 | ſub | 29 | 26 | 23 | 20 | 17 | 15 | 12 | 9 | 6 | 3 | |
| 45 | ſub | 25 | 23 | 20 | 18 | 15 | 13 | 10 | 8 | 5 | 3 | |
| 46 | ſub | 22 | 19 | 17 | 15 | 13 | 11 | 9 | 6 | 4 | 2 | |
| 47 | ſub | 18 | 16 | 14 | 12 | 11 | 9 | 7 | 5 | 4 | 2 | |
| 48 | ſub | 12 | 11 | 10 | 8 | 7 | 6 | 5 | 4 | 2 | 1 | |
| 49 | ſub | 7 | 6 | 5 | 5 | 4 | 3 | 3 | 2 | 1 | 1 | |

Tab. 2. For Stand. Casks of the 2 Diam. Variety.

| Indexes of the 2 Diam Var. | | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 Var | 2 Var | 3 Var | 4 Var | 5 Var | 6 Var | 7 Var | 8 Var | 9 Var | 10 Var | 11 Var |
| 70 | | 730 | 745 | 749 | 753 | 758 | 762 | 766 | 770 | 775 | 779 | 783 |
| 71 | | 738 | 752 | 756 | 760 | 764 | 769 | 773 | 777 | 781 | 785 | 790 |
| 72 | | 746 | 759 | 763 | 767 | 771 | 775 | 779 | 783 | 787 | 791 | 795 |
| 73 | | 754 | 766 | 770 | 774 | 778 | 782 | 786 | 789 | 793 | 797 | 801 |
| Height of the Seg. | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif |
| 51 | add | 16 | 13 | 12 | 12 | 11 | 10 | 10 | 9 | 8 | 8 | 7 |
| 52 | add | 28 | 24 | 23 | 22 | 20 | 19 | 18 | 17 | 16 | 14 | 13 |
| 53 | add | 42 | 35 | 33 | 32 | 30 | 28 | 26 | 25 | 23 | 21 | 19 |
| 54 | add | 50 | 43 | 41 | 39 | 37 | 34 | 32 | 30 | 28 | 26 | 24 |
| 55 | add | 59 | 50 | 48 | 45 | 43 | 40 | 38 | 35 | 33 | 30 | 28 |
| 56 | add | 67 | 58 | 55 | 52 | 49 | 46 | 44 | 41 | 38 | 35 | 32 |
| 57 | add | 73 | 62 | 59 | 56 | 53 | 50 | 47 | 43 | 40 | 37 | 34 |
| 58 | add | 79 | 68 | 65 | 61 | 58 | 54 | 52 | 48 | 44 | 41 | 37 |
| 59 | add | 84 | 72 | 68 | 65 | 61 | 58 | 54 | 50 | 47 | 43 | 40 |
| 60 | add | 88 | 75 | 71 | 68 | 64 | 60 | 56 | 53 | 49 | 45 | 41 |
| 61 | add | 90 | 76 | 72 | 68 | 65 | 61 | 57 | 53 | 49 | 46 | 42 |
| 62 | add | 91 | 77 | 73 | 69 | 65 | 62 | 58 | 54 | 50 | 46 | 42 |
| 63 | add | 93 | 78 | 74 | 70 | 66 | 62 | 59 | 55 | 51 | 47 | 43 |
| 64 | add | 93 | 78 | 74 | 70 | 66 | 62 | 59 | 55 | 51 | 47 | 43 |
| 65 | add | 90 | 76 | 72 | 68 | 65 | 61 | 57 | 53 | 49 | 46 | 42 |
| 66 | add | 88 | 74 | 70 | 67 | 63 | 59 | 56 | 52 | 48 | 44 | 41 |
| 67 | add | 87 | 73 | 69 | 66 | 62 | 58 | 55 | 51 | 47 | 44 | 40 |
| 68 | add | 82 | 69 | 66 | 62 | 59 | 55 | 52 | 48 | 45 | 41 | 38 |
| 69 | add | 80 | 66 | 63 | 59 | 56 | 53 | 50 | 46 | 43 | 40 | 36 |
| 70 | add | 74 | 63 | 60 | 57 | 54 | 50 | 47 | 44 | 41 | 38 | 35 |
| 71 | add | 71 | 59 | 56 | 53 | 50 | 47 | 44 | 41 | 38 | 35 | 32 |
| 72 | add | 70 | 57 | 54 | 51 | 48 | 46 | 43 | 40 | 37 | 34 | 31 |
| 73 | add | 62 | 52 | 49 | 47 | 44 | 42 | 39 | 36 | 34 | 31 | 29 |
| 74 | add | 56 | 46 | 44 | 41 | 39 | 37 | 35 | 32 | 30 | 28 | 25 |
| 75 | add | 49 | 40 | 38 | 36 | 34 | 32 | 30 | 28 | 26 | 24 | 22 |

Tab. 2. For Stand. Casks of the 2 Diam. Variety.

| Indexes of the 2 Diam Var. | 12 Var | 13 Var | 14 Var | 15 Var | 16 Var | 17 Var | 18 Var | 19 Var | 20 Var | 21 Var | 22 Var |
|---|---|---|---|---|---|---|---|---|---|---|---|
|  | Indexes of the Varieties of Curvature. |  |  |  |  |  |  |  |  |  |  |
| 70 | 787 | 792 | 796 | 800 | 804 | 809 | 813 | 817 | 821 | 826 | 830 |
| 71 | 794 | 798 | 802 | 806 | 810 | 815 | 819 | 822 | 827 | 831 | 835 |
| 72 | 799 | 803 | 807 | 811 | 815 | 819 | 823 | 827 | 831 | 835 | 839 |
| 73 | 805 | 809 | 813 | 817 | 821 | 825 | 828 | 832 | 836 | 840 | 844 |

| Height of the Seg. |  | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 51 | add | 7 | 6 | 5 | 5 | 4 | 3 | 3 | 2 | 1 | 1 |
| 52 | add | 12 | 11 | 10 | 8 | 7 | 6 | 5 | 4 | 2 | 1 |
| 53 | add | 18 | 16 | 14 | 12 | 11 | 9 | 7 | 5 | 4 | 2 |
| 54 | add | 22 | 19 | 17 | 15 | 13 | 11 | 9 | 6 | 4 | 2 |
| 55 | add | 25 | 23 | 20 | 18 | 15 | 13 | 10 | 8 | 5 | 3 |
| 56 | add | 29 | 26 | 23 | 20 | 17 | 15 | 12 | 9 | 6 | 3 |
| 57 | add | 31 | 28 | 25 | 22 | 19 | 16 | 12 | 9 | 6 | 3 |
| 58 | add | 34 | 31 | 27 | 24 | 20 | 17 | 14 | 10 | 7 | 3 |
| 59 | add | 36 | 32 | 29 | 25 | 22 | 18 | 14 | 11 | 7 | 4 |
| 60 | add | 38 | 34 | 30 | 26 | 23 | 19 | 15 | 11 | 8 | 4 |
| 61 | add | 38 | 34 | 30 | 27 | 23 | 19 | 15 | 11 | 8 | 4 |
| 62 | add | 39 | 35 | 31 | 27 | 23 | 19 | 15 | 12 | 8 | 4 |
| 63 | add | 39 | 35 | 31 | 27 | 23 | 20 | 16 | 12 | 8 | 4 |
| 64 | add | 39 | 35 | 31 | 27 | 23 | 20 | 16 | 12 | 8 | 4 |
| 65 | add | 38 | 34 | 30 | 27 | 23 | 19 | 15 | 11 | 8 | 4 |
| 66 | add | 37 | 33 | 30 | 26 | 22 | 19 | 15 | 11 | 7 | 4 |
| 67 | add | 37 | 33 | 29 | 26 | 22 | 18 | 15 | 11 | 7 | 4 |
| 68 | add | 35 | 31 | 28 | 24 | 21 | 17 | 14 | 10 | 7 | 3 |
| 69 | add | 33 | 30 | 26 | 23 | 20 | 17 | 13 | 10 | 7 | 3 |
| 70 | add | 32 | 28 | 25 | 22 | 19 | 16 | 13 | 9 | 6 | 3 |
| 71 | add | 30 | 27 | 24 | 21 | 18 | 15 | 12 | 9 | 6 | 3 |
| 72 | add | 29 | 26 | 23 | 20 | 17 | 14 | 11 | 9 | 6 | 3 |
| 73 | add | 26 | 23 | 21 | 18 | 16 | 13 | 10 | 8 | 5 | 3 |
| 74 | add | 23 | 21 | 18 | 16 | 14 | 12 | 9 | 7 | 5 | 2 |
| 75 | add | 20 | 18 | 16 | 14 | 12 | 10 | 8 | 6 | 4 | 2 |

Tab. 2. For Stand. Casks of the 2 Diam. Variety.

| Indexes of the 2 Diam Var. | | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 Var | 2 Var | 3 Var | 4 Var | 5 Var | 6 Var | 7 Var | 8 Var | 9 Var | 10 Var | 11 Var |
| 70 | | 730 | 745 | 749 | 753 | 758 | 762 | 766 | 770 | 775 | 779 | 783 |
| 71 | | 738 | 752 | 756 | 760 | 764 | 769 | 773 | 777 | 781 | 785 | 790 |
| 72 | | 746 | 759 | 763 | 767 | 771 | 775 | 779 | 783 | 787 | 791 | 795 |
| 73 | | 754 | 766 | 770 | 774 | 778 | 782 | 786 | 789 | 793 | 797 | 801 |
| Height of the Seg. | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif |
| 76 | add | 44 | 36 | 34 | 32 | 31 | 29 | 27 | 25 | 23 | 22 | 20 |
| 77 | add | 38 | 32 | 30 | 29 | 27 | 26 | 24 | 22 | 21 | 19 | 18 |
| 78 | add | 32 | 26 | 25 | 23 | 22 | 21 | 20 | 18 | 17 | 16 | 14 |
| 79 | add | 23 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 |
| 80 | add | 19 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 | 10 | 9 |
| 81 | add | 12 | 11 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 |
| 82 | add | 7 | 6 | 6 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 3 |
| 83 | add | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 |
| 84 | ſub | 4 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 |
| 85 | ſub | 8 | 7 | 7 | 6 | 6 | 6 | 5 | 5 | 5 | 4 | 4 |
| 86 | ſub | 13 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 6 |
| 87 | ſub | 16 | 13 | 12 | 12 | 11 | 10 | 10 | 9 | 8 | 8 | 7 |
| 88 | ſub | 22 | 18 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 |
| 89 | ſub | 24 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 |
| 90 | ſub | 26 | 21 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 |
| 91 | ſub | 26 | 21 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 |
| 92 | ſub | 28 | 24 | 23 | 22 | 20 | 19 | 18 | 17 | 16 | 14 | 13 |
| 93 | ſub | 28 | 23 | 22 | 21 | 20 | 18 | 17 | 16 | 15 | 14 | 13 |
| 94 | ſub | 26 | 21 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 |
| 95 | ſub | 26 | 21 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 |
| 96 | ſub | 23 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 |
| 97 | ſub | 20 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 16 | 10 | 9 |
| 98 | ſub | 14 | 11 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 |
| 99 | ſub | 6 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 3 | 3 | 3 |

Tab. 2. For Stand. Casks of the 2 Diam. Variety.

| Indexes of the 2 Diam Var. | | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 12 Var | 13 Var | 14 Var | 15 Var | 16 Var | 17 Var | 18 Var | 19 Var | 20 Var | 21 Var | 22 Var |
| 70 | | 787 | 792 | 796 | 800 | 804 | 809 | 813 | 817 | 821 | 826 | 830 |
| 71 | | 794 | 798 | 802 | 806 | 810 | 815 | 819 | 823 | 827 | 831 | 835 |
| 72 | | 799 | 803 | 807 | 811 | 815 | 819 | 823 | 827 | 831 | 835 | 839 |
| 73 | | 805 | 809 | 813 | 817 | 821 | 825 | 828 | 832 | 836 | 840 | 844 |
| Height of the Seg. | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | |
| 76 | add | 18 | 16 | 14 | 13 | 11 | 9 | 7 | 5 | 4 | 2 | |
| 77 | add | 16 | 14 | 13 | 11 | 10 | 8 | 6 | 5 | 3 | 2 | |
| 78 | add | 13 | 12 | 10 | 9 | 8 | 7 | 5 | 4 | 3 | 1 | |
| 79 | add | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 80 | add | 8 | 7 | 6 | 6 | 5 | 4 | 3 | 2 | 2 | 1 | |
| 81 | add | 6 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | |
| 82 | add | 3 | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | | |
| 83 | add | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 84 | ſub | 2 | 1 | 1 | 1 | 1 | 1 | 1 | | | | |
| 85 | ſub | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 | | |
| 86 | ſub | 5 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | |
| 87 | ſub | 7 | 6 | 5 | 5 | 4 | 3 | 3 | 2 | 1 | 1 | |
| 88 | ſub | 9 | 8 | 7 | 6 | 5 | 5 | 3 | 3 | 2 | 1 | |
| 89 | ſub | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 90 | ſub | 11 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 91 | ſub | 11 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 92 | ſub | 12 | 11 | 10 | 8 | 7 | 6 | 5 | 4 | 2 | 1 | |
| 93 | ſub | 12 | 10 | 9 | 8 | 7 | 6 | 5 | 3 | 2 | 1 | |
| 94 | ſub | 11 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 95 | ſub | 11 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 96 | ſub | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 97 | ſub | 8 | 7 | 6 | 6 | 5 | 4 | 3 | 2 | 2 | 1 | |
| 98 | ſub | 6 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | |
| 99 | ſub | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | | |

Tab. 3. For Stand. Casks of the 3 Diam. Variety.

| Indexes of the 3 Diam Var: | | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 Var | 2 Var | 3 Var | 4 Var | 5 Var | 6 Var | 7 Var | 8 Var | 9 Var | 10 Var | 11 Var |
| 74 | | 762 | 774 | 778 | 782 | 785 | 789 | 793 | 797 | 800 | 804 | 808 |
| 75 | | 771 | 781 | 785 | 788 | 792 | 796 | 799 | 803 | 807 | 810 | 814 |
| 76 | | 779 | 789 | 793 | 796 | 800 | 803 | 807 | 810 | 814 | 817 | 821 |
| Height of the Seg. | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif |
| 1 | add | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 3 | 3 | 3 |
| 2 | add | 13 | 11 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 |
| 3 | add | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 11 | 10 | 9 | 8 |
| 4 | add | 22 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 | 9 |
| 5 | add | 22 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 |
| 6 | add | 23 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 |
| 7 | add | 23 | 22 | 21 | 20 | 19 | 18 | 17 | 15 | 14 | 13 | 12 |
| 8 | add | 23 | 22 | 21 | 20 | 19 | 18 | 17 | 15 | 14 | 13 | 12 |
| 9 | add | 25 | 21 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 |
| 10 | add | 24 | 21 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 |
| 11 | add | 2[illegible] | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 |
| 12 | add | 20 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 | 9 |
| 13 | add | 18 | 15 | 14 | 14 | 13 | 12 | 11 | 11 | 10 | 9 | 8 |
| 14 | add | 14 | 12 | 11 | 11 | 10 | 10 | 9 | 8 | 8 | 7 | 7 |
| 15 | add | 12 | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 6 | 5 | 5 |
| 16 | add | 7 | 6 | 6 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 3 |
| 17 | add | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 |
| 18 | ſub | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 |
| 19 | ſub | 6 | 6 | 6 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 3 |
| 20 | ſub | 10 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 6 |
| 21 | ſub | 15 | 14 | 13 | 13 | 12 | 11 | 11 | 10 | 9 | 9 | 8 |
| 22 | ſub | 21 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 |
| 23 | ſub | 25 | 23 | 22 | 21 | 20 | 18 | 17 | 16 | 15 | 14 | 13 |
| 24 | ſub | 31 | 27 | 26 | 24 | 23 | 22 | 20 | 19 | 18 | 16 | 15 |
| 25 | ſub | 36 | 32 | 30 | 29 | 27 | 26 | 24 | 22 | 21 | 19 | 18 |

Tab. 3. For Stand. Casks of the 3 Diam. Variety.

| Indexes of the 3 Diam Var. | | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 12 Var | 13 Var | 14 Var | 15 Var | 16 Var | 17 Var | 18 Var | 19 Var | 20 Var | 21 Var | 22 Var |
| 74 | | 812 | 815 | 819 | 823 | 827 | 830 | 834 | 838 | 842 | 845 | 849 |
| 75 | | 818 | 821 | 825 | 828 | 832 | 836 | 839 | 843 | 847 | 850 | 854 |
| 76 | | 824 | 828 | 831 | 835 | 838 | 842 | 845 | 849 | 852 | 856 | 859 |
| Height of the Segment. | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | |
| 1 | add | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | | |
| 2 | add | 6 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | |
| 3 | add | 8 | 7 | 6 | 5 | 5 | 4 | 3 | 2 | 2 | 1 | |
| 4 | add | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 3 | 2 | 1 | |
| 5 | add | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 6 | add | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 7 | add | 11 | 10 | 9 | 8 | 7 | 6 | 4 | 3 | 2 | 1 | |
| 8 | add | 11 | 10 | 9 | 8 | 7 | 6 | 4 | 3 | 2 | 1 | |
| 9 | add | 11 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 10 | add | 11 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 11 | add | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 12 | add | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 3 | 2 | 1 | |
| 13 | add | 8 | 7 | 6 | 5 | 5 | 4 | 3 | 2 | 2 | 1 | |
| 14 | add | 6 | 5 | 5 | 4 | 4 | 3 | 2 | 2 | 1 | 1 | |
| 15 | add | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | | |
| 16 | add | 3 | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | | |
| 17 | add | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 18 | ſub | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 19 | ſub | 3 | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | | |
| 20 | ſub | 5 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | |
| 21 | ſub | 7 | 6 | 6 | 5 | 4 | 4 | 3 | 2 | 1 | 1 | |
| 22 | ſub | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 23 | ſub | 12 | 10 | 9 | 8 | 7 | 6 | 5 | 3 | 2 | 1 | |
| 24 | ſub | 14 | 12 | 11 | 9 | 8 | 7 | 5 | 4 | 3 | 1 | |
| 25 | ſub | 16 | 14 | 13 | 11 | 10 | 8 | 6 | 5 | 3 | 2 | |

Tab. 3. For Stand. Caſks of the 3 Diam. Variety.

| Indexes of the 3 Diam Var. | | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 Var | 2 Var | 3 Var | 4 Var | 5 Var | 6 Var | 7 Var | 8 Var | 9 Var | 10 Var | 11 Var |
| 74 | | 762 | 774 | 778 | 782 | 785 | 789 | 793 | 797 | 800 | 804 | 808 |
| 75 | | 771 | 781 | 785 | 788 | 792 | 796 | 799 | 803 | 807 | 810 | 814 |
| 76 | | 779 | 789 | 793 | 796 | 800 | 803 | 807 | 810 | 814 | 817 | 821 |
| Heigh: of the Seg. | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif |
| 26 | ſub | 38 | 35 | 33 | 32 | 30 | 28 | 26 | 25 | 23 | 21 | 19 |
| 27 | ſub | 46 | 40 | 38 | 36 | 34 | 32 | 30 | 28 | 26 | 24 | 22 |
| 28 | ſub | 50 | 44 | 42 | 40 | 37 | 35 | 33 | 31 | 29 | 26 | 24 |
| 29 | ſub | 55 | 48 | 46 | 43 | 41 | 38 | 36 | 34 | 31 | 29 | 26 |
| 30 | ſub | 58 | 51 | 48 | 46 | 43 | 41 | 38 | 36 | 33 | 31 | 28 |
| 31 | ſub | 62 | 53 | 50 | 48 | 45 | 42 | 40 | 37 | 34 | 32 | 29 |
| 32 | ſub | 65 | 56 | 53 | 50 | 48 | 45 | 42 | 39 | 36 | 34 | 31 |
| 33 | ſub | 68 | 59 | 56 | 53 | 50 | 47 | 44 | 41 | 38 | 35 | 32 |
| 34 | ſub | 70 | 60 | 57 | 54 | 51 | 48 | 45 | 42 | 39 | 36 | 33 |
| 35 | ſub | 72 | 62 | 59 | 56 | 53 | 50 | 47 | 43 | 40 | 37 | 34 |
| 36 | ſub | 74 | 63 | 60 | 57 | 54 | 50 | 47 | 44 | 41 | 38 | 35 |
| 37 | ſub | 74 | 64 | 61 | 58 | 54 | 51 | 48 | 45 | 42 | 38 | 35 |
| 38 | ſub | 74 | 63 | 60 | 57 | 54 | 50 | 47 | 44 | 41 | 38 | 35 |
| 39 | ſub | 73 | 62 | 59 | 56 | 53 | 50 | 47 | 43 | 40 | 37 | 34 |
| 40 | ſub | 71 | 61 | 58 | 55 | 52 | 49 | 46 | 43 | 40 | 37 | 34 |
| 41 | ſub | 68 | 58 | 55 | 52 | 49 | 46 | 44 | 41 | 38 | 35 | 32 |
| 42 | ſub | 71 | 56 | 53 | 50 | 48 | 45 | 42 | 39 | 36 | 34 | 31 |
| 43 | ſub | 61 | 52 | 49 | 47 | 44 | 42 | 39 | 36 | 34 | 31 | 29 |
| 44 | ſub | 56 | 47 | 45 | 43 | 40 | 38 | 36 | 33 | 30 | 28 | 26 |
| 45 | ſub | 49 | 41 | 39 | 37 | 35 | 33 | 31 | 29 | 27 | 25 | 23 |
| 46 | ſub | 42 | 35 | 33 | 32 | 30 | 28 | 26 | 25 | 23 | 21 | 19 |
| 47 | ſub | 35 | 28 | 27 | 25 | 24 | 22 | 21 | 20 | 18 | 17 | 15 |
| 48 | ſub | 24 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 |
| 49 | ſub | 14 | 7 | 7 | 6 | 6 | 6 | 5 | 5 | 5 | 4 | 4 |

## Tab. 3. For Stand. Casks of the 3 Diam. Variety.

| Indexes of the 3 Diam Var. | | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 12 Var | 13 Var | 14 Var | 15 Var | 16 Var | 17 Var | 18 Var | 19 Var | 20 Var | 21 Var | 22 Var |
| 74 | | 812 | 815 | 819 | 823 | 827 | 830 | 834 | 838 | 842 | 845 | 849 |
| 75 | | 818 | 821 | 825 | 828 | 832 | 836 | 839 | 843 | 847 | 850 | 854 |
| 76 | | 824 | 828 | 831 | 835 | 838 | 842 | 845 | 849 | 852 | 856 | 859 |
| Height of the Segment. | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | |
| 26 | ſub | 18 | 16 | 14 | 12 | 11 | 9 | 7 | 5 | 4 | 2 | |
| 27 | ſub | 20 | 18 | 16 | 14 | 12 | 10 | 8 | 6 | 4 | 2 | |
| 28 | ſub | 22 | 20 | 18 | 15 | 13 | 11 | 9 | 7 | 4 | 2 | |
| 29 | ſub | 24 | 22 | 19 | 17 | 14 | 12 | 10 | 7 | 5 | 2 | |
| 30 | ſub | 26 | 23 | 20 | 18 | 15 | 13 | 10 | 8 | 5 | 3 | |
| 31 | ſub | 27 | 24 | 21 | 19 | 16 | 13 | 11 | 8 | 5 | 3 | |
| 32 | ſub | 28 | 25 | 22 | 20 | 17 | 14 | 11 | 8 | 6 | 3 | |
| 33 | ſub | 30 | 27 | 24 | 21 | 18 | 15 | 12 | 9 | 6 | 3 | |
| 34 | ſub | 30 | 27 | 24 | 21 | 18 | 15 | 12 | 9 | 6 | 3 | |
| 35 | ſub | 31 | 28 | 25 | 22 | 19 | 16 | 12 | 9 | 6 | 3 | |
| 36 | ſub | 32 | 28 | 25 | 22 | 19 | 16 | 13 | 9 | 6 | 3 | |
| 37 | ſub | 32 | 29 | 26 | 22 | 19 | 16 | 13 | 10 | 6 | 3 | |
| 38 | ſub | 32 | 28 | 25 | 22 | 19 | 16 | 13 | 9 | 6 | 3 | |
| 39 | ſub | 31 | 28 | 25 | 22 | 19 | 16 | 12 | 9 | 6 | 3 | |
| 40 | ſub | 31 | 27 | 24 | 21 | 18 | 15 | 12 | 9 | 6 | 3 | |
| 41 | ſub | 29 | 26 | 23 | 20 | 17 | 15 | 12 | 9 | 6 | 3 | |
| 42 | ſub | 28 | 25 | 22 | 20 | 17 | 14 | 11 | 8 | 6 | 3 | |
| 43 | ſub | 26 | 23 | 21 | 18 | 16 | 13 | 10 | 8 | 5 | 3 | |
| 44 | ſub | 24 | 21 | 19 | 17 | 15 | 12 | 9 | 7 | 5 | 2 | |
| 45 | ſub | 21 | 18 | 16 | 14 | 12 | 10 | 8 | 6 | 4 | 2 | |
| 46 | ſub | 18 | 16 | 14 | 12 | 11 | 9 | 7 | 5 | 4 | 2 | |
| 47 | ſub | 14 | 13 | 11 | 10 | 8 | 7 | 6 | 4 | 3 | 1 | |
| 48 | ſub | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 49 | ſub | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 | | |

Tab. 3. For Stand. Casks of the 3 Diam. Variety.

| Indexes of the 3 Diam Var. | | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 Var | 2 Var | 3 Var | 4 Var | 5 Var | 6 Var | 7 Var | 8 Var | 9 Var | 10 Var | 11 Var |
| 74 | | 762 | 774 | 778 | 782 | 785 | 789 | 793 | 797 | 800 | 804 | 808 |
| 75 | | 771 | 781 | 785 | 788 | 792 | 796 | 799 | 803 | 807 | 810 | 814 |
| 76 | | 779 | 789 | 793 | 796 | 800 | 803 | 807 | 810 | 814 | 817 | 821 |
| Height of the Segment. | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif |
| 51 | add | 14 | 7 | 7 | 6 | 6 | 6 | 5 | 5 | 5 | 4 | 4 |
| 52 | add | 24 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 |
| 53 | add | 35 | 28 | 27 | 25 | 24 | 22 | 21 | 20 | 18 | 17 | 15 |
| 54 | add | 42 | 35 | 33 | 32 | 30 | 28 | 26 | 25 | 23 | 21 | 19 |
| 55 | add | 49 | 41 | 39 | 37 | 35 | 33 | 31 | 29 | 27 | 25 | 23 |
| 56 | add | 56 | 47 | 45 | 43 | 40 | 38 | 36 | 33 | 30 | 28 | 26 |
| 57 | add | 61 | 52 | 49 | 47 | 44 | 42 | 39 | 36 | 34 | 31 | 29 |
| 58 | add | 71 | 56 | 53 | 50 | 48 | 45 | 42 | 39 | 36 | 34 | 31 |
| 59 | add | 68 | 58 | 55 | 52 | 49 | 46 | 44 | 41 | 38 | 35 | 32 |
| 60 | add | 71 | 61 | 58 | 55 | 52 | 49 | 46 | 43 | 40 | 37 | 34 |
| 61 | add | 73 | 62 | 59 | 56 | 53 | 50 | 47 | 43 | 40 | 37 | 34 |
| 62 | add | 74 | 63 | 60 | 57 | 54 | 50 | 47 | 44 | 41 | 38 | 35 |
| 63 | add | 74 | 64 | 61 | 58 | 54 | 51 | 48 | 45 | 42 | 38 | 35 |
| 64 | add | 74 | 63 | 60 | 57 | 54 | 50 | 47 | 44 | 41 | 38 | 35 |
| 65 | add | 72 | 62 | 59 | 56 | 53 | 50 | 47 | 43 | 40 | 37 | 34 |
| 66 | add | 70 | 60 | 57 | 54 | 51 | 48 | 45 | 42 | 39 | 36 | 33 |
| 67 | add | 68 | 59 | 56 | 53 | 50 | 47 | 44 | 41 | 38 | 35 | 32 |
| 68 | add | 65 | 56 | 53 | 50 | 48 | 45 | 42 | 39 | 36 | 34 | 31 |
| 69 | add | 62 | 53 | 50 | 48 | 45 | 42 | 40 | 37 | 34 | 32 | 29 |
| 70 | add | 58 | 51 | 48 | 46 | 43 | 41 | 38 | 36 | 33 | 31 | 28 |
| 71 | add | 55 | 48 | 46 | 43 | 41 | 38 | 36 | 34 | 31 | 29 | 26 |
| 72 | add | 50 | 44 | 42 | 40 | 37 | 35 | 33 | 31 | 29 | 26 | 24 |
| 73 | add | 46 | 40 | 38 | 36 | 34 | 32 | 30 | 28 | 26 | 24 | 22 |
| 74 | add | 38 | 35 | 33 | 32 | 30 | 28 | 26 | 25 | 23 | 21 | 19 |
| 75 | add | 36 | 32 | 30 | 29 | 27 | 26 | 24 | 22 | 21 | 19 | 18 |

## Tab. 3. For Stand. Casks of the 3 Diam. Variety.

| Indexes of the 3 Diam Var. | | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 12 Var | 13 Var | 14 Var | 15 Var | 16 Var | 17 Var | 18 Var | 19 Var | 20 Var | 21 Var | 22 Var |
| 74 | | 812 | 815 | 819 | 823 | 827 | 830 | 834 | 838 | 842 | 845 | 849 |
| 75 | | 818 | 821 | 825 | 828 | 832 | 836 | 839 | 843 | 847 | 850 | 854 |
| 76 | | 824 | 828 | 831 | 835 | 838 | 842 | 845 | 849 | 852 | 856 | 859 |
| Height of the Segment. | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | |
| 51 | add | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 | | |
| 52 | add | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 53 | add | 14 | 13 | 11 | 10 | 8 | 7 | 6 | 4 | 3 | 1 | |
| 54 | add | 18 | 16 | 14 | 12 | 11 | 9 | 7 | 5 | 4 | 2 | |
| 55 | add | 21 | 18 | 16 | 14 | 12 | 10 | 8 | 6 | 4 | 2 | |
| 56 | add | 24 | 21 | 19 | 17 | 15 | 12 | 9 | 7 | 5 | 2 | |
| 57 | add | 26 | 23 | 21 | 18 | 16 | 13 | 10 | 8 | 5 | 3 | |
| 58 | add | 28 | 25 | 22 | 20 | 17 | 14 | 11 | 8 | 6 | 3 | |
| 59 | add | 29 | 26 | 23 | 20 | 17 | 15 | 12 | 9 | 6 | 3 | |
| 60 | add | 31 | 27 | 24 | 21 | 18 | 15 | 12 | 9 | 6 | 3 | |
| 61 | add | 31 | 28 | 25 | 22 | 19 | 16 | 12 | 9 | 6 | 3 | |
| 62 | add | 32 | 28 | 25 | 22 | 19 | 16 | 13 | 9 | 6 | 3 | |
| 63 | add | 32 | 29 | 26 | 22 | 19 | 16 | 13 | 10 | 6 | 3 | |
| 64 | add | 32 | 28 | 25 | 22 | 19 | 16 | 13 | 9 | 6 | 3 | |
| 65 | add | 31 | 28 | 25 | 22 | 19 | 16 | 12 | 9 | 6 | 3 | |
| 66 | add | 30 | 27 | 24 | 21 | 18 | 15 | 12 | 9 | 6 | 3 | |
| 67 | add | 30 | 27 | 24 | 21 | 18 | 15 | 12 | 9 | 6 | 3 | |
| 68 | add | 28 | 25 | 22 | 20 | 17 | 14 | 11 | 8 | 6 | 3 | |
| 69 | add | 27 | 24 | 21 | 19 | 16 | 13 | 11 | 8 | 5 | 3 | |
| 70 | add | 26 | 23 | 20 | 18 | 15 | 13 | 10 | 8 | 5 | 3 | |
| 71 | add | 24 | 22 | 19 | 17 | 14 | 12 | 10 | 7 | 5 | 2 | |
| 72 | add | 22 | 20 | 18 | 15 | 13 | 11 | 9 | 7 | 4 | 2 | |
| 73 | add | 20 | 18 | 16 | 14 | 12 | 10 | 8 | 6 | 4 | 2 | |
| 74 | add | 18 | 16 | 14 | 12 | 11 | 9 | 7 | 5 | 4 | 2 | |
| 75 | add | 16 | 14 | 13 | 11 | 10 | 8 | 6 | 5 | 3 | 2 | |

Tab. 3. For Stand. Casks of the 3 Diam. Variety.

| Indexes of the 3 Diam Var. | | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 Var | 2 Var | 3 Var | 4 Var | 5 Var | 6 Var | 7 Var | 8 Var | 9 Var | 10 Var | 11 Var |
| 74 | | 762 | 774 | 778 | 782 | 785 | 789 | 793 | 797 | 800 | 804 | 808 |
| 75 | | 771 | 781 | 785 | 788 | 792 | 796 | 799 | 803 | 807 | 810 | 814 |
| 76 | | 779 | 789 | 793 | 796 | 800 | 803 | 807 | 810 | 814 | 817 | 821 |
| Height of the Seg. | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif |
| 76 | add | 31 | 27 | 26 | 24 | 23 | 22 | 20 | 19 | 18 | 16 | 15 |
| 77 | add | 25 | 23 | 22 | 21 | 20 | 18 | 17 | 16 | 15 | 14 | 13 |
| 78 | add | 21 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 |
| 79 | add | 15 | 14 | 13 | 13 | 12 | 11 | 11 | 10 | 9 | 9 | 8 |
| 80 | add | 10 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 6 |
| 81 | add | 6 | 6 | 6 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 3 |
| 82 | add | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 |
| 83 | ſub | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 |
| 84 | ſub | 7 | 6 | 6 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 3 |
| 85 | ſub | 12 | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 6 | 5 | 5 |
| 86 | ſub | 14 | 12 | 11 | 11 | 10 | 10 | 9 | 8 | 8 | 7 | 7 |
| 87 | ſub | 18 | 15 | 14 | 14 | 13 | 12 | 11 | 11 | 10 | 9 | 8 |
| 88 | ſub | 20 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 | 9 |
| 89 | ſub | 23 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 |
| 90 | ſub | 24 | 21 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 |
| 91 | ſub | 25 | 21 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 |
| 92 | ſub | 23 | 22 | 21 | 20 | 19 | 18 | 17 | 15 | 14 | 13 | 12 |
| 93 | ſub | 23 | 22 | 21 | 20 | 19 | 18 | 17 | 15 | 14 | 13 | 12 |
| 94 | ſub | 23 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 |
| 95 | ſub | 22 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 |
| 96 | ſub | 22 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 | 9 |
| 97 | ſub | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 11 | 10 | 9 | 8 |
| 98 | ſub | 13 | 11 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 |
| 99 | ſub | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 3 | 3 | 3 |

## Tab. 3. For Stand. Casks of the 3 Diam. Variety.

| Indexes of the 3 Diam Var. | | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 12 Var | 13 Var | 14 Var | 15 Var | 16 Var | 17 Var | 18 Var | 19 Var | 20 Var | 21 Var | 22 Var |
| 74 | | 812 | 815 | 819 | 823 | 827 | 830 | 834 | 838 | 842 | 845 | 849 |
| 75 | | 818 | 821 | 825 | 828 | 832 | 836 | 839 | 843 | 847 | 850 | 854 |
| 76 | | 824 | 828 | 831 | 835 | 838 | 842 | 845 | 849 | 852 | 856 | 859 |
| Height of the Segment. | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | |
| 76 | add | 14 | 12 | 11 | 9 | 8 | 7 | 5 | 4 | 3 | 1 | |
| 77 | add | 12 | 10 | 9 | 8 | 7 | 6 | 5 | 3 | 2 | 1 | |
| 78 | add | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 79 | add | 7 | 6 | 6 | 5 | 4 | 4 | 3 | 2 | 1 | 1 | |
| 80 | add | 5 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | |
| 81 | add | 3 | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | | |
| 82 | add | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 83 | ſub | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 84 | ſub | 3 | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | | |
| 85 | ſub | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | | |
| 86 | ſub | 6 | 5 | 5 | 4 | 4 | 3 | 2 | 2 | 1 | 1 | |
| 87 | ſub | 8 | 7 | 6 | 5 | 5 | 4 | 3 | 2 | 2 | 1 | |
| 88 | ſub | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 3 | 2 | 1 | |
| 89 | ſub | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 90 | ſub | 11 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 91 | ſub | 11 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 92 | ſub | 11 | 10 | 9 | 8 | 7 | 6 | 4 | 3 | 2 | 1 | |
| 93 | ſub | 11 | 10 | 9 | 8 | 7 | 6 | 4 | 3 | 2 | 1 | |
| 94 | ſub | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 95 | ſub | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 96 | ſub | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 3 | 2 | 1 | |
| 97 | ſub | 8 | 7 | 6 | 5 | 5 | 4 | 3 | 2 | 2 | 1 | |
| 98 | ſub | 6 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | |
| 99 | ſub | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | | |

## Tab. 4. For Stand. Casks of the 4 Diam. Variety.

| Indexes of the 4 Diam Var. | | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 Var | 2 Var | 3 Var | 4 Var | 5 Var | 6 Var | 7 Var | 8 Var | 9 Var | 10 Var | 11 Var |
| 77 | | 788 | 796 | 799 | 803 | 806 | 810 | 813 | 816 | 820 | 823 | 827 |
| 78 | | 796 | 804 | 807 | 811 | 814 | 817 | 820 | 824 | 827 | 830 | 833 |
| 79 | | 805 | 812 | 815 | 818 | 821 | 825 | 828 | 831 | 834 | 837 | 840 |
| 80 | | 813 | 820 | 823 | 826 | 829 | 832 | 835 | 838 | 841 | 844 | 847 |
| Height of the Seg. | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif |
| 1 | add | 5 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 2 | 2 |
| 2 | add | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 6 | 5 | 5 |
| 3 | add | 15 | 13 | 12 | 12 | 11 | 10 | 10 | 9 | 8 | 8 | 7 |
| 4 | add | 19 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 | 9 |
| 5 | add | 21 | 18 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 |
| 6 | add | 21 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 |
| 7 | add | 21 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 |
| 8 | add | 23 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 |
| 9 | add | 21 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 |
| 10 | add | 21 | 18 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 |
| 11 | add | 21 | 18 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 |
| 12 | add | 19 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 | 9 |
| 13 | add | 15 | 13 | 12 | 12 | 11 | 10 | 10 | 9 | 8 | 8 | 7 |
| 14 | add | 13 | 11 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 |
| 15 | add | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 6 | 5 | 5 |
| 16 | add | 7 | 6 | 6 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 3 |
| 17 | add | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 |
| 18 | ſub | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 19 | ſub | 5 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 2 | 2 |
| 20 | ſub | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 6 | 5 | 5 |
| 21 | ſub | 13 | 11 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 |
| 22 | ſub | 19 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 | 9 |
| 23 | ſub | 23 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 |
| 24 | ſub | 27 | 24 | 23 | 22 | 20 | 19 | 18 | 17 | 16 | 14 | 13 |
| 25 | ſub | 30 | 27 | 26 | 24 | 23 | 22 | 20 | 19 | 18 | 16 | 15 |

Tab. 4. For Stand. Casks of the 4 Diam. Variety.

| Indexes of the 4 Diam Var. | | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 12 Var | 13 Var | 14 Var | 15 Var | 16 Var | 17 Var | 18 Var | 19 Var | 20 Var | 21 Var | 22 Var |
| 77 | | 830 | 833 | 837 | 840 | 844 | 847 | 850 | 854 | 857 | 861 | 864 |
| 78 | | 837 | 840 | 843 | 846 | 850 | 853 | 856 | 859 | 863 | 866 | 869 |
| 79 | | 844 | 847 | 850 | 853 | 856 | 859 | 862 | 866 | 869 | 872 | 875 |
| 80 | | 850 | 853 | 856 | 859 | 862 | 865 | 868 | 871 | 874 | 877 | 880 |
| Height of the Seg- | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | |
| 1 | add | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | | | |
| 2 | add | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | | |
| 3 | add | 7 | 6 | 5 | 5 | 4 | 3 | 3 | 2 | 1 | 1 | |
| 4 | add | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 3 | 2 | 1 | |
| 5 | add | 9 | 8 | 7 | 6 | 5 | 5 | 3 | 3 | 2 | 1 | |
| 6 | add | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 7 | add | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 8 | add | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 9 | add | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 10 | add | 9 | 8 | 7 | 6 | 5 | 5 | 3 | 3 | 2 | 1 | |
| 11 | add | 9 | 8 | 7 | 6 | 5 | 5 | 3 | 3 | 2 | 1 | |
| 12 | add | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 3 | 2 | 1 | |
| 13 | add | 7 | 6 | 5 | 5 | 4 | 3 | 3 | 2 | 1 | 1 | |
| 14 | add | 6 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | |
| 15 | add | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | | |
| 16 | add | 3 | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | | |
| 17 | add | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 18 | ſub | 1 | | | | | | | | | | |
| 19 | ſub | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | | | |
| 20 | ſub | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | | |
| 21 | ſub | 6 | 5 | 4 | 4 | 3 | 3 | 2 | 1 | 1 | | |
| 22 | ſub | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 3 | 2 | 1 | |
| 23 | ſub | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 24 | ſub | 12 | 11 | 10 | 8 | 7 | 6 | 5 | 4 | 2 | 1 | |
| 25 | ſub | 14 | 12 | 11 | 9 | 8 | 7 | 5 | 4 | 3 | 1 | |

## Tab. 4. For Stand. Casks of the 4 Diam. Variety.

| Indexes of the 4 Diam Var. | | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 Var | 2 Var | 3 Var | 4 Var | 5 Var | 6 Var | 7 Var | 8 Var | 9 Var | 10 Var | 11 Var |
| 77 | | 788 | 796 | 799 | 803 | 806 | 810 | 813 | 816 | 820 | 823 | 827 |
| 78 | | 796 | 804 | 807 | 811 | 814 | 817 | 820 | 824 | 827 | 830 | 833 |
| 79 | | 805 | 812 | 815 | 818 | 821 | 825 | 828 | 831 | 834 | 837 | 840 |
| 80 | | 813 | 820 | 823 | 826 | 829 | 832 | 835 | 838 | 841 | 844 | 847 |
| Height of the Seg. | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif |
| 26 | ſub | 35 | 31 | 30 | 28 | 27 | 25 | 24 | 22 | 21 | 19 | 18 |
| 27 | ſub | 39 | 35 | 33 | 32 | 30 | 28 | 26 | 25 | 23 | 21 | 19 |
| 28 | ſub | 43 | 39 | 37 | 35 | 33 | 31 | 29 | 27 | 25 | 23 | 21 |
| 29 | ſub | 46 | 41 | 39 | 37 | 35 | 33 | 31 | 29 | 27 | 25 | 23 |
| 30 | ſub | 51 | 45 | 43 | 41 | 38 | 36 | 34 | 32 | 29 | 27 | 25 |
| 31 | ſub | 52 | 46 | 44 | 41 | 39 | 37 | 35 | 32 | 30 | 28 | 25 |
| 32 | ſub | 55 | 49 | 47 | 45 | 42 | 40 | 38 | 34 | 31 | 29 | 27 |
| 33 | ſub | 60 | 53 | 50 | 48 | 45 | 42 | 40 | 37 | 34 | 32 | 29 |
| 34 | ſub | 60 | 53 | 50 | 48 | 45 | 42 | 40 | 37 | 34 | 32 | 29 |
| 35 | ſub | 61 | 54 | 51 | 49 | 46 | 43 | 41 | 38 | 35 | 33 | 30 |
| 36 | ſub | 62 | 55 | 52 | 50 | 47 | 44 | 42 | 38 | 35 | 33 | 30 |
| 37 | ſub | 63 | 56 | 53 | 50 | 48 | 45 | 42 | 39 | 36 | 34 | 31 |
| 38 | ſub | 63 | 56 | 53 | 50 | 48 | 45 | 42 | 39 | 36 | 34 | 31 |
| 39 | ſub | 61 | 54 | 51 | 49 | 46 | 43 | 41 | 38 | 35 | 33 | 30 |
| 40 | ſub | 61 | 54 | 51 | 49 | 46 | 43 | 41 | 38 | 35 | 33 | 30 |
| 41 | ſub | 58 | 52 | 49 | 47 | 44 | 42 | 39 | 36 | 34 | 31 | 29 |
| 42 | ſub | 53 | 47 | 45 | 43 | 40 | 38 | 36 | 33 | 30 | 28 | 26 |
| 43 | ſub | 51 | 45 | 43 | 41 | 38 | 36 | 34 | 32 | 29 | 27 | 25 |
| 44 | ſub | 48 | 42 | 40 | 38 | 36 | 34 | 32 | 30 | 28 | 26 | 24 |
| 45 | ſub | 42 | 37 | 35 | 33 | 31 | 30 | 28 | 26 | 24 | 22 | 20 |
| 46 | ſub | 35 | 31 | 30 | 28 | 27 | 25 | 24 | 22 | 21 | 19 | 18 |
| 47 | ſub | 28 | 25 | 24 | 23 | 22 | 20 | 19 | 18 | 17 | 15 | 14 |
| 48 | ſub | 21 | 18 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 |
| 49 | ſub | 7 | 6 | 6 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 3 |

Tab. 4. For Stand. Casks of the 4 Diam. Variety.

| Indexes of the 4 Diam Var. | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 12 Var | 13 Var | 14 Var | 15 Var | 16 Var | 17 Var | 18 Var | 19 Var | 20 Var | 21 Var | 22 Var |
| 77 | 830 | 833 | 837 | 840 | 844 | 847 | 850 | 854 | 857 | 861 | 864 |
| 78 | 837 | 840 | 843 | 846 | 850 | 853 | 856 | 859 | 863 | 866 | 869 |
| 79 | 844 | 847 | 850 | 853 | 856 | 859 | 862 | 866 | 869 | 872 | 875 |
| 80 | 850 | 853 | 856 | 859 | 862 | 865 | 868 | 871 | 874 | 877 | 880 |

| Height of the Seg. | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 26 | ſub | 16 | 14 | 12 | 11 | 9 | 8 | 6 | 5 | 3 | 2 |
| 27 | ſub | 18 | 16 | 14 | 12 | 11 | 9 | 7 | 5 | 4 | 2 |
| 28 | ſub | 20 | 18 | 16 | 14 | 12 | 10 | 8 | 6 | 4 | 2 |
| 29 | ſub | 21 | 18 | 16 | 14 | 12 | 10 | 8 | 6 | 4 | 2 |
| 30 | ſub | 23 | 20 | 18 | 16 | 14 | 11 | 9 | 7 | 5 | 2 |
| 31 | ſub | 23 | 21 | 18 | 16 | 14 | 12 | 9 | 7 | 5 | 2 |
| 32 | ſub | 25 | 22 | 20 | 18 | 16 | 13 | 9 | 7 | 5 | 2 |
| 33 | ſub | 27 | 24 | 21 | 19 | 16 | 13 | 11 | 8 | 5 | 3 |
| 34 | ſub | 27 | 24 | 21 | 19 | 16 | 13 | 11 | 8 | 5 | 3 |
| 35 | ſub | 28 | 24 | 21 | 19 | 16 | 13 | 11 | 8 | 5 | 3 |
| 36 | ſub | 28 | 25 | 22 | 20 | 17 | 14 | 11 | 8 | 5 | 3 |
| 37 | ſub | 28 | 25 | 22 | 20 | 17 | 14 | 11 | 8 | 6 | 3 |
| 38 | ſub | 28 | 25 | 22 | 20 | 17 | 14 | 11 | 8 | 6 | 3 |
| 39 | ſub | 28 | 24 | 21 | 19 | 16 | 13 | 11 | 8 | 5 | 3 |
| 40 | ſub | 28 | 24 | 21 | 19 | 16 | 13 | 11 | 8 | 5 | 3 |
| 41 | ſub | 26 | 23 | 21 | 18 | 16 | 13 | 10 | 8 | 5 | 3 |
| 42 | ſub | 24 | 21 | 19 | 17 | 15 | 12 | 9 | 7 | 5 | 2 |
| 43 | ſub | 23 | 20 | 18 | 16 | 14 | 11 | 9 | 7 | 5 | 2 |
| 44 | ſub | 22 | 18 | 16 | 14 | 12 | 10 | 8 | 6 | 4 | 2 |
| 45 | ſub | 19 | 17 | 15 | 13 | 11 | 9 | 7 | 6 | 4 | 2 |
| 46 | ſub | 16 | 14 | 12 | 11 | 9 | 8 | 6 | 5 | 3 | 2 |
| 47 | ſub | 13 | 12 | 10 | 9 | 8 | 7 | 5 | 4 | 3 | 2 |
| 48 | ſub | 9 | 8 | 7 | 6 | 5 | 5 | 4 | 3 | 2 | 1 |
| 49 | ſub | 3 | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | |

## Tab. 4. For Stand. Casks of the 4 Diam. Variety.

| Indexes of the 4 Diam Var. | | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 Var | 2 Var | 3 Var | 4 Var | 5 Var | 6 Var | 7 Var | 8 Var | 9 Var | 10 Var | 11 Var |
| 77 | | 788 | 796 | 799 | 803 | 806 | 810 | 813 | 816 | 820 | 823 | 827 |
| 78 | | 796 | 804 | 807 | 811 | 814 | 817 | 820 | 824 | 827 | 830 | 833 |
| 79 | | 805 | 812 | 815 | 818 | 821 | 825 | 828 | 831 | 834 | 837 | 840 |
| 80 | | 813 | 820 | 823 | 826 | 829 | 832 | 835 | 838 | 841 | 844 | 847 |
| Height of the Seg. | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif |
| 51 | add | 7 | 6 | 6 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 3 |
| 52 | add | 21 | 18 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 |
| 53 | add | 28 | 25 | 24 | 23 | 22 | 20 | 19 | 18 | 17 | 15 | 14 |
| 54 | add | 35 | 31 | 30 | 28 | 27 | 25 | 24 | 22 | 21 | 19 | 18 |
| 55 | add | 42 | 37 | 35 | 33 | 31 | 30 | 28 | 26 | 24 | 22 | 20 |
| 56 | add | 48 | 42 | 40 | 38 | 36 | 34 | 32 | 30 | 28 | 26 | 24 |
| 57 | add | 51 | 45 | 43 | 41 | 38 | 36 | 34 | 32 | 29 | 27 | 25 |
| 58 | add | 53 | 47 | 45 | 43 | 40 | 38 | 36 | 33 | 30 | 28 | 26 |
| 59 | add | 58 | 52 | 49 | 47 | 44 | 42 | 39 | 36 | 34 | 31 | 29 |
| 60 | add | 61 | 54 | 51 | 49 | 46 | 43 | 41 | 38 | 35 | 33 | 30 |
| 61 | add | 61 | 54 | 51 | 49 | 46 | 43 | 41 | 38 | 35 | 33 | 30 |
| 62 | add | 63 | 56 | 53 | 50 | 48 | 45 | 42 | 39 | 36 | 34 | 31 |
| 63 | add | 63 | 56 | 53 | 50 | 48 | 45 | 42 | 39 | 36 | 34 | 31 |
| 64 | add | 62 | 55 | 52 | 50 | 47 | 44 | 42 | 38 | 35 | 33 | 30 |
| 65 | add | 61 | 54 | 51 | 49 | 46 | 43 | 41 | 38 | 35 | 33 | 30 |
| 66 | add | 60 | 53 | 50 | 48 | 45 | 42 | 40 | 37 | 34 | 32 | 29 |
| 67 | add | 60 | 53 | 50 | 48 | 45 | 42 | 40 | 37 | 34 | 32 | 29 |
| 68 | add | 55 | 49 | 47 | 45 | 42 | 40 | 38 | 34 | 31 | 29 | 27 |
| 69 | add | 52 | 46 | 44 | 41 | 39 | 37 | 35 | 32 | 30 | 28 | 25 |
| 70 | add | 51 | 45 | 43 | 41 | 38 | 36 | 34 | 32 | 29 | 27 | 25 |
| 71 | add | 46 | 41 | 39 | 37 | 35 | 33 | 31 | 29 | 27 | 25 | 23 |
| 72 | add | 43 | 39 | 37 | 35 | 33 | 31 | 29 | 27 | 25 | 23 | 21 |
| 73 | add | 39 | 35 | 33 | 32 | 30 | 28 | 26 | 25 | 23 | 21 | 19 |
| 74 | add | 35 | 31 | 30 | 28 | 27 | 25 | 24 | 22 | 21 | 19 | 18 |
| 75 | add | 30 | 27 | 26 | 24 | 23 | 22 | 20 | 19 | 18 | 16 | 15 |

## Tab. 4. For Stand. Casks of the 4 Diam. Variety.

| Indexes of the 4 Diam Var. | | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 12 Var | 13 Var | 14 Var | 15 Var | 16 Var | 17 Var | 18 Var | 19 Var | 20 Var | 21 Var | 22 Var |
| 77 | | 830 | 833 | 837 | 840 | 844 | 847 | 850 | 854 | 857 | 861 | 864 |
| 78 | | 837 | 840 | 843 | 846 | 850 | 853 | 856 | 859 | 863 | 866 | 869 |
| 79 | | 844 | 847 | 850 | 853 | 856 | 859 | 862 | 866 | 869 | 872 | 875 |
| 80 | | 850 | 853 | 856 | 859 | 862 | 865 | 868 | 871 | 874 | 877 | 880 |
| Height of the Seg. | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | |
| 51 | add | 3 | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | | |
| 52 | add | 9 | 8 | 7 | 6 | 5 | 5 | 4 | 3 | 2 | 1 | |
| 53 | add | 13 | 12 | 10 | 9 | 8 | 7 | 5 | 4 | 3 | 2 | |
| 54 | add | 16 | 14 | 12 | 11 | 9 | 8 | 6 | 5 | 3 | 2 | |
| 55 | add | 19 | 17 | 15 | 13 | 11 | 9 | 7 | 6 | 4 | 2 | |
| 56 | add | 22 | 18 | 16 | 14 | 12 | 10 | 8 | 6 | 4 | 2 | |
| 57 | add | 23 | 20 | 18 | 16 | 14 | 11 | 9 | 7 | 5 | 2 | |
| 58 | add | 24 | 21 | 19 | 17 | 15 | 12 | 9 | 7 | 5 | 2 | |
| 59 | add | 26 | 23 | 21 | 18 | 16 | 13 | 10 | 8 | 5 | 3 | |
| 60 | add | 28 | 24 | 21 | 19 | 16 | 13 | 11 | 8 | 5 | 3 | |
| 61 | add | 28 | 24 | 21 | 19 | 16 | 13 | 11 | 8 | 5 | 3 | |
| 62 | add | 28 | 25 | 22 | 20 | 17 | 14 | 11 | 8 | 6 | 3 | |
| 63 | add | 28 | 25 | 22 | 20 | 17 | 14 | 11 | 8 | 6 | 3 | |
| 64 | add | 28 | 25 | 22 | 20 | 17 | 14 | 11 | 8 | 5 | 3 | |
| 65 | add | 28 | 24 | 21 | 19 | 16 | 13 | 11 | 8 | 5 | 3 | |
| 66 | add | 27 | 24 | 21 | 19 | 16 | 13 | 11 | 8 | 5 | 3 | |
| 67 | add | 27 | 24 | 21 | 19 | 16 | 13 | 11 | 8 | 5 | 3 | |
| 68 | add | 25 | 22 | 20 | 18 | 16 | 13 | 9 | 7 | 5 | 2 | |
| 69 | add | 23 | 21 | 18 | 16 | 14 | 12 | 9 | 7 | 5 | 2 | |
| 70 | add | 23 | 20 | 18 | 16 | 14 | 11 | 9 | 7 | 5 | 2 | |
| 71 | add | 21 | 18 | 16 | 14 | 12 | 10 | 8 | 6 | 4 | 2 | |
| 72 | add | 20 | 18 | 16 | 14 | 12 | 10 | 8 | 6 | 4 | 2 | |
| 73 | add | 18 | 16 | 14 | 12 | 11 | 9 | 7 | 5 | 4 | 2 | |
| 74 | add | 16 | 14 | 12 | 11 | 9 | 8 | 6 | 5 | 3 | 2 | |
| 75 | add | 14 | 12 | 11 | 9 | 8 | 7 | 5 | 4 | 3 | 1 | |

Tab. 4. For Stand. Casks of the 4 Diam. Variety.

| Indexes of the 4 Diam Var. | Indexes of the Varieties of Curvature. 1 Var | 2 Var | 3 Var | 4 Var | 5 Var | 6 Var | 7 Var | 8 Var | 9 Var | 10 Var | 11 Var |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 77 | 788 | 796 | 799 | 803 | 806 | 810 | 813 | 816 | 820 | 823 | 827 |
| 78 | 796 | 804 | 807 | 811 | 814 | 817 | 820 | 824 | 827 | 830 | 833 |
| 79 | 805 | 812 | 815 | 818 | 821 | 825 | 828 | 831 | 834 | 837 | 840 |
| 80 | 813 | 820 | 823 | 826 | 829 | 832 | 835 | 838 | 841 | 844 | 847 |

| Height of the Seg. | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 76 | add | 27 | 24 | 23 | 22 | 20 | 19 | 18 | 17 | 16 | 14 | 13 |
| 77 | add | 23 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 |
| 78 | add | 19 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 | 9 |
| 79 | add | 13 | 11 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 |
| 80 | add | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 6 | 5 | 5 |
| 81 | add | 5 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 2 | 2 |
| 82 | add | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 83 | ſub | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 |
| 84 | ſub | 7 | 6 | 6 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 3 |
| 85 | ſub | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 6 | 5 | 5 |
| 86 | ſub | 13 | 11 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 |
| 87 | ſub | 15 | 13 | 12 | 12 | 11 | 10 | 10 | 9 | 8 | 8 | 7 |
| 88 | ſub | 19 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 | 9 |
| 89 | ſub | 21 | 18 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 |
| 90 | ſub | 21 | 18 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 |
| 91 | ſub | 21 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 |
| 92 | ſub | 23 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 |
| 93 | ſub | 21 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 |
| 94 | ſub | 21 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 |
| 95 | ſub | 21 | 18 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 |
| 96 | ſub | 19 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 | 9 |
| 97 | ſub | 15 | 13 | 12 | 12 | 11 | 10 | 10 | 9 | 8 | 8 | 7 |
| 98 | ſub | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 6 | 5 | 5 |
| 99 | ſub | 5 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 2 | 2 |

Tab. 4. For Stand. Casks of the 4 Diam. Variety.

| Indexes of the 4 Diam Var. | | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 12 Var | 13 Var | 14 Var | 15 Var | 16 Var | 17 Var | 18 Var | 19 Var | 20 Var | 21 Var | 22 Var |
| 77 | | 830 | 833 | 837 | 840 | 844 | 847 | 850 | 854 | 857 | 861 | 864 |
| 78 | | 837 | 840 | 843 | 846 | 850 | 853 | 856 | 859 | 863 | 866 | 869 |
| 79 | | 844 | 847 | 850 | 853 | 856 | 859 | 862 | 866 | 869 | 872 | 875 |
| 80 | | 850 | 853 | 856 | 859 | 862 | 865 | 868 | 871 | 874 | 877 | 880 |
| Height of the Seg- | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | |
| 76 | add | 12 | 11 | 10 | 8 | 7 | 6 | 5 | 4 | 2 | 1 | |
| 77 | add | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 78 | add | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 3 | 2 | 1 | |
| 79 | add | 6 | 5 | 4 | 4 | 3 | 3 | 2 | 1 | 1 | | |
| 80 | add | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | | |
| 81 | add | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | | | |
| 82 | add | 1 | | | | | | | | | | |
| 83 | ſub | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 84 | ſub | 3 | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | | |
| 85 | ſub | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | | |
| 86 | ſub | 6 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | |
| 87 | ſub | 7 | 6 | 5 | 5 | 4 | 3 | 3 | 2 | 1 | 1 | |
| 88 | ſub | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 3 | 2 | 1 | |
| 89 | ſub | 9 | 8 | 7 | 6 | 5 | 5 | 3 | 3 | 2 | 1 | |
| 90 | ſub | 9 | 8 | 7 | 6 | 5 | 5 | 3 | 3 | 2 | 1 | |
| 91 | ſub | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 92 | ſub | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 93 | ſub | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 94 | ſub | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 95 | ſub | 9 | 8 | 7 | 6 | 5 | 5 | 3 | 3 | 2 | 1 | |
| 96 | ſub | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 3 | 2 | 1 | |
| 97 | ſub | 7 | 6 | 5 | 5 | 4 | 3 | 3 | 2 | 1 | 1 | |
| 98 | ſub | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | | |
| 99 | ſub | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | | | |

| Tab. 5. For Stand. Casks of the 5 Diam. Variety. | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Indexes of the 5 Diam Var. | | Indexes of the Varieties of Curvature. | | | | | | | | | | |
| | | 1 Var | 2 Var | 3 Var | 4 Var | 5 Var | 6 Var | 7 Var | 8 Var | 9 Var | 10 Var | 11 Var |
| 81 | | 822 | 828 | 831 | 834 | 837 | 839 | 842 | 845 | 848 | 851 | 854 |
| 82 | | 831 | 836 | 839 | 842 | 844 | 847 | 850 | 853 | 855 | 858 | 861 |
| 83 | | 840 | 844 | 847 | 849 | 852 | 854 | 857 | 860 | 862 | 865 | 867 |
| 84 | | 849 | 853 | 855 | 858 | 860 | 863 | 865 | 868 | 870 | 873 | 875 |
| Height of the Seg. | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif |
| 1 | add | 4 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 2 | 2 |
| 2 | add | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 6 | 5 | 5 |
| 3 | add | 13 | 12 | 11 | 11 | 10 | 10 | 9 | 8 | 8 | 7 | 7 |
| 4 | add | 17 | 15 | 14 | 14 | 13 | 12 | 11 | 11 | 10 | 9 | 8 |
| 5 | add | 19 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 | 9 |
| 6 | add | 20 | 18 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 |
| 7 | add | 21 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 |
| 8 | add | 22 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 |
| 9 | add | 22 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 |
| 10 | add | 22 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 |
| 11 | add | 22 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 |
| 12 | add | 20 | 18 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 |
| 13 | add | 18 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 | 10 | 9 |
| 14 | add | 17 | 15 | 14 | 14 | 13 | 12 | 11 | 11 | 10 | 9 | 8 |
| 15 | add | 14 | 13 | 12 | 12 | 11 | 10 | 10 | 9 | 8 | 8 | 7 |
| 16 | add | 12 | 11 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 |
| 17 | add | 9 | 8 | 8 | 7 | 7 | 6 | 6 | 6 | 5 | 5 | 4 |
| 18 | add | 7 | 6 | 6 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 3 |
| 19 | add | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 |
| 20 | | | | | | | | | | | | |
| 21 | ſub | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 |
| 22 | ſub | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 6 | 5 | 5 |
| 23 | ſub | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 6 | 5 | 5 |
| 24 | ſub | 12 | 11 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 |
| 25 | ſub | 17 | 15 | 14 | 14 | 13 | 12 | 11 | 11 | 10 | 9 | 8 |

Tab. 5. For Stand. Casks of the 5 Diam. Variety.

| Indexes of the 5 Diam Var. | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 12 Var | 13 Var | 14 Var | 15 Var | 16 Var | 17 Var | 18 Var | 19 Var | 20 Var | 21 Var | 22 Var |
| 81 | 857 | 859 | 862 | 865 | 868 | 871 | 874 | 876 | 879 | 882 | 885 |
| 82 | 864 | 866 | 869 | 872 | 875 | 877 | 880 | 883 | 886 | 888 | 891 |
| 83 | 870 | 873 | 875 | 878 | 880 | 883 | 886 | 888 | 891 | 893 | 896 |
| 84 | 878 | 880 | 882 | 885 | 887 | 890 | 892 | 895 | 897 | 900 | 902 |

| Height of the Seg- | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | add | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | | |
| 2 | add | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | |
| 3 | add | 6 | 5 | 5 | 4 | 4 | 3 | 2 | 2 | 1 | 1 |
| 4 | add | 8 | 7 | 6 | 5 | 5 | 4 | 3 | 2 | 2 | 1 |
| 5 | add | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 3 | 2 | 1 |
| 6 | add | 9 | 8 | 7 | 6 | 5 | 5 | 3 | 3 | 2 | 1 |
| 7 | add | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 8 | add | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 9 | add | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 10 | add | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 11 | add | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 12 | add | 9 | 8 | 7 | 6 | 5 | 5 | 3 | 3 | 2 | 1 |
| 13 | add | 8 | 7 | 6 | 6 | 5 | 4 | 3 | 2 | 2 | 1 |
| 14 | add | 8 | 7 | 6 | 5 | 5 | 4 | 3 | 2 | 2 | 1 |
| 15 | add | 7 | 6 | 5 | 5 | 4 | 3 | 3 | 2 | 1 | 1 |
| 16 | add | 6 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 |
| 17 | add | 4 | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | |
| 18 | add | 3 | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | |
| 19 | add | 1 | 1 | 1 | 1 | 1 | 1 | | | | |
| 20 | | | | | | | | | | | |
| 21 | ſub | 1 | 1 | 1 | 1 | 1 | 1 | | | | |
| 22 | ſub | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | |
| 23 | ſub | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | |
| 24 | ſub | 6 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 |
| 25 | ſub | 8 | 7 | 6 | 5 | 5 | 4 | 3 | 2 | 2 | 1 |

## Tab. 5. For Stand. Casks of the 5 Diam. Variety.

| Indexes of the 5 Diam Var. | | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 Var | 2 Var | 3 Var | 4 Var | 5 Var | 6 Var | 7 Var | 8 Var | 9 Var | 10 Var | 11 Var |
| 81 | | 822 | 828 | 831 | 834 | 837 | 839 | 842 | 845 | 848 | 851 | 854 |
| 82 | | 831 | 836 | 839 | 842 | 844 | 847 | 850 | 853 | 855 | 858 | 861 |
| 83 | | 840 | 844 | 847 | 849 | 852 | 854 | 857 | 860 | 862 | 865 | 867 |
| 84 | | 849 | 853 | 855 | 858 | 860 | 863 | 865 | 868 | 870 | 873 | 875 |
| Height of the Seg. | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif |
| 26 | ſub | 20 | 18 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 |
| 27 | ſub | 24 | 22 | 21 | 20 | 19 | 18 | 17 | 15 | 14 | 13 | 12 |
| 28 | ſub | 28 | 25 | 24 | 23 | 22 | 20 | 19 | 18 | 17 | 15 | 14 |
| 29 | ſub | 30 | 27 | 26 | 24 | 23 | 22 | 20 | 19 | 18 | 16 | 15 |
| 30 | ſub | 32 | 29 | 27 | 26 | 24 | 23 | 22 | 20 | 19 | 17 | 16 |
| 31 | ſub | 34 | 31 | 30 | 28 | 27 | 25 | 24 | 22 | 21 | 19 | 18 |
| 32 | ſub | 37 | 34 | 32 | 30 | 29 | 27 | 26 | 24 | 22 | 20 | 18 |
| 33 | ſub | 38 | 36 | 34 | 32 | 30 | 28 | 28 | 26 | 24 | 22 | 20 |
| 34 | ſub | 38 | 36 | 34 | 32 | 30 | 28 | 28 | 26 | 24 | 22 | 20 |
| 35 | ſub | 42 | 38 | 36 | 34 | 32 | 30 | 29 | 27 | 25 | 23 | 21 |
| 36 | ſub | 44 | 40 | 38 | 36 | 34 | 32 | 30 | 28 | 26 | 24 | 22 |
| 37 | ſub | 44 | 40 | 38 | 36 | 34 | 32 | 30 | 28 | 26 | 24 | 22 |
| 38 | ſub | 43 | 39 | 37 | 35 | 33 | 31 | 29 | 27 | 25 | 23 | 21 |
| 39 | ſub | 43 | 39 | 37 | 35 | 33 | 31 | 29 | 27 | 25 | 23 | 21 |
| 40 | ſub | 42 | 38 | 36 | 34 | 32 | 30 | 29 | 27 | 25 | 23 | 21 |
| 41 | ſub | 41 | 37 | 35 | 33 | 31 | 30 | 28 | 26 | 24 | 22 | 20 |
| 42 | ſub | 39 | 35 | 33 | 32 | 30 | 28 | 26 | 25 | 23 | 21 | 19 |
| 43 | ſub | 36 | 33 | 31 | 30 | 28 | 26 | 25 | 23 | 21 | 20 | 18 |
| 44 | ſub | 34 | 31 | 30 | 28 | 27 | 25 | 24 | 22 | 21 | 19 | 18 |
| 45 | ſub | 30 | 27 | 26 | 24 | 23 | 22 | 20 | 19 | 18 | 16 | 15 |
| 46 | ſub | 25 | 23 | 22 | 21 | 20 | 18 | 17 | 16 | 15 | 14 | 13 |
| 47 | ſub | 20 | 18 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 |
| 48 | ſub | 13 | 12 | 11 | 11 | 10 | 10 | 9 | 8 | 8 | 7 | 7 |
| 49 | ſub | 8 | 7 | 7 | 6 | 6 | 6 | 5 | 5 | 5 | 4 | 4 |

Tab. 5. For Stand. Casks of the 5 Diam. Variety.

| Indexes of the 5 Diam Var. |  | Indexes of the Varieties of Curvature. |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  |  | 12 Var | 13 Var | 14 Var | 15 Var | 16 Var | 17 Var | 18 Var | 19 Var | 20 Var | 21 Var | 22 Var |
| 81 |  | 857 | 859 | 862 | 865 | 868 | 871 | 874 | 876 | 879 | 882 | 885 |
| 82 |  | 864 | 866 | 869 | 872 | 875 | 877 | 880 | 883 | 886 | 888 | 891 |
| 83 |  | 870 | 873 | 875 | 878 | 880 | 883 | 886 | 888 | 891 | 893 | 896 |
| 84 |  | 878 | 880 | 882 | 885 | 887 | 890 | 892 | 895 | 897 | 900 | 902 |
| Height of the Seg. |  | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif |  |
| 26 | ſub | 9 | 8 | 7 | 6 | 5 | 5 | 3 | 3 | 2 | 1 |  |
| 27 | ſub | 11 | 10 | 9 | 8 | 7 | 6 | 4 | 3 | 2 | 1 |  |
| 28 | ſub | 13 | 12 | 10 | 9 | 8 | 7 | 5 | 4 | 3 | 2 |  |
| 29 | ſub | 14 | 12 | 11 | 9 | 8 | 7 | 5 | 4 | 3 | 1 |  |
| 30 | ſub | 14 | 13 | 11 | 10 | 8 | 7 | 6 | 4 | 3 | 1 |  |
| 31 | ſub | 16 | 14 | 12 | 11 | 9 | 8 | 6 | 5 | 3 | 2 |  |
| 32 | ſub | 17 | 15 | 13 | 12 | 10 | 8 | 7 | 5 | 3 | 2 |  |
| 33 | ſub | 18 | 16 | 14 | 12 | 10 | 10 | 7 | 6 | 4 | 2 |  |
| 34 | ſub | 18 | 16 | 14 | 12 | 10 | 10 | 7 | 6 | 4 | 2 |  |
| 35 | ſub | 19 | 17 | 15 | 13 | 11 | 10 | 7 | 6 | 4 | 2 |  |
| 36 | ſub | 20 | 18 | 16 | 14 | 12 | 10 | 8 | 6 | 4 | 2 |  |
| 37 | ſub | 20 | 18 | 16 | 14 | 12 | 10 | 8 | 6 | 4 | 2 |  |
| 38 | ſub | 20 | 18 | 16 | 14 | 12 | 10 | 8 | 6 | 4 | 2 |  |
| 39 | ſub | 20 | 18 | 16 | 14 | 12 | 10 | 8 | 6 | 4 | 2 |  |
| 40 | ſub | 19 | 17 | 15 | 13 | 11 | 10 | 7 | 6 | 4 | 2 |  |
| 41 | ſub | 19 | 17 | 15 | 13 | 11 | 9 | 7 | 6 | 4 | 2 |  |
| 42 | ſub | 18 | 16 | 14 | 12 | 11 | 9 | 7 | 5 | 4 | 2 |  |
| 43 | ſub | 17 | 15 | 13 | 12 | 10 | 8 | 7 | 5 | 3 | 2 |  |
| 44 | ſub | 16 | 14 | 12 | 11 | 9 | 8 | 6 | 5 | 3 | 2 |  |
| 45 | ſub | 14 | 12 | 11 | 9 | 8 | 7 | 5 | 4 | 3 | 1 |  |
| 46 | ſub | 12 | 10 | 9 | 8 | 7 | 6 | 5 | 3 | 2 | 1 |  |
| 47 | ſub | 9 | 8 | 7 | 6 | 5 | 5 | 3 | 3 | 2 | 1 |  |
| 48 | ſub | 6 | 5 | 5 | 4 | 4 | 3 | 2 | 2 | 1 | 1 |  |
| 49 | ſub | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 |  |  |

Tab. 5. For Stand. Casks of the 5 Diam. Variety.

| Indexes of the 5 Diam Var. | | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 Var | 2 Var | 3 Var | 4 Var | 5 Var | 6 Var | 7 Var | 8 Var | 9 Var | 10 Var | 11 Var |
| 81 | | 822 | 828 | 831 | 834 | 837 | 839 | 842 | 845 | 848 | 851 | 854 |
| 82 | | 831 | 836 | 839 | 842 | 844 | 847 | 850 | 853 | 855 | 858 | 861 |
| 83 | | 840 | 844 | 847 | 849 | 852 | 854 | 857 | 860 | 862 | 865 | 867 |
| 84 | | 849 | 853 | 855 | 858 | 860 | 863 | 865 | 868 | 870 | 873 | 875 |
| Height of the Seg- | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif |
| 51 | add | 8 | 7 | 7 | 6 | 6 | 6 | 5 | 5 | 5 | 4 | 4 |
| 52 | add | 13 | 12 | 11 | 11 | 10 | 10 | 9 | 8 | 8 | 7 | 7 |
| 53 | add | 20 | 18 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 |
| 54 | add | 25 | 23 | 22 | 21 | 20 | 18 | 17 | 16 | 15 | 14 | 13 |
| 55 | add | 30 | 27 | 26 | 24 | 23 | 22 | 20 | 19 | 18 | 16 | 15 |
| 56 | add | 34 | 31 | 30 | 28 | 27 | 25 | 24 | 22 | 21 | 19 | 18 |
| 57 | add | 36 | 33 | 31 | 30 | 28 | 26 | 25 | 23 | 21 | 20 | 18 |
| 58 | add | 39 | 35 | 33 | 32 | 30 | 28 | 26 | 25 | 23 | 21 | 19 |
| 59 | add | 41 | 37 | 35 | 33 | 31 | 30 | 28 | 26 | 24 | 22 | 20 |
| 60 | add | 42 | 38 | 36 | 34 | 32 | 30 | 29 | 27 | 25 | 23 | 21 |
| 61 | add | 43 | 39 | 37 | 35 | 33 | 31 | 29 | 27 | 25 | 23 | 21 |
| 62 | add | 43 | 39 | 37 | 35 | 33 | 31 | 29 | 27 | 25 | 23 | 21 |
| 63 | add | 44 | 40 | 38 | 36 | 34 | 32 | 30 | 28 | 26 | 24 | 22 |
| 64 | add | 44 | 40 | 38 | 36 | 34 | 32 | 30 | 28 | 26 | 24 | 22 |
| 65 | add | 42 | 38 | 36 | 34 | 32 | 30 | 29 | 27 | 25 | 23 | 21 |
| 66 | add | 38 | 36 | 34 | 32 | 30 | 28 | 28 | 26 | 24 | 22 | 20 |
| 67 | add | 38 | 36 | 34 | 32 | 30 | 28 | 28 | 26 | 24 | 22 | 20 |
| 68 | add | 37 | 34 | 32 | 30 | 29 | 27 | 26 | 24 | 22 | 20 | 18 |
| 69 | add | 34 | 31 | 30 | 28 | 27 | 25 | 24 | 22 | 21 | 19 | 18 |
| 70 | add | 32 | 29 | 27 | 26 | 24 | 23 | 22 | 20 | 19 | 17 | 16 |
| 71 | add | 30 | 27 | 26 | 24 | 23 | 22 | 20 | 19 | 18 | 16 | 15 |
| 72 | add | 28 | 25 | 24 | 23 | 22 | 20 | 19 | 18 | 17 | 15 | 14 |
| 73 | add | 24 | 22 | 21 | 20 | 19 | 18 | 17 | 15 | 14 | 13 | 12 |
| 74 | add | 20 | 18 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 |
| 75 | add | 17 | 15 | 14 | 14 | 13 | 12 | 11 | 11 | 10 | 9 | 8 |

Tab. 5. For Stand. Casks of the 5 Diam. Variety.

| Indexes of the 5 Diam Var. | | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 12 Var | 13 Var | 14 Var | 15 Var | 16 Var | 17 Var | 18 Var | 19 Var | 20 Var | 21 Var | 22 Var |
| 81 | | 857 | 859 | 862 | 865 | 868 | 871 | 874 | 876 | 879 | 882 | 885 |
| 82 | | 864 | 866 | 869 | 872 | 875 | 877 | 880 | 883 | 886 | 888 | 891 |
| 83 | | 870 | 873 | 875 | 878 | 880 | 883 | 886 | 888 | 891 | 893 | 896 |
| 84 | | 878 | 880 | 882 | 885 | 887 | 890 | 892 | 895 | 897 | 900 | 902 |
| Height of the Seg- | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | |
| 51 | add | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 | | |
| 52 | add | 6 | 5 | 5 | 4 | 4 | 3 | 2 | 2 | 1 | 1 | |
| 53 | add | 9 | 8 | 7 | 6 | 5 | 5 | 3 | 3 | 2 | 1 | |
| 54 | add | 12 | 10 | 9 | 8 | 7 | 6 | 5 | 3 | 2 | 1 | |
| 55 | add | 14 | 12 | 11 | 9 | 8 | 7 | 5 | 4 | 3 | 1 | |
| 56 | add | 16 | 14 | 12 | 11 | 9 | 8 | 6 | 5 | 3 | 2 | |
| 57 | add | 17 | 15 | 13 | 12 | 10 | 8 | 7 | 5 | 3 | 2 | |
| 58 | add | 18 | 16 | 14 | 12 | 11 | 9 | 7 | 5 | 4 | 2 | |
| 59 | add | 19 | 17 | 15 | 13 | 11 | 9 | 7 | 6 | 4 | 2 | |
| 60 | add | 19 | 17 | 15 | 13 | 11 | 10 | 7 | 6 | 4 | 2 | |
| 61 | add | 20 | 18 | 16 | 14 | 12 | 10 | 8 | 6 | 4 | 2 | |
| 62 | add | 20 | 18 | 16 | 14 | 12 | 10 | 8 | 6 | 4 | 2 | |
| 63 | add | 20 | 18 | 16 | 14 | 12 | 10 | 8 | 6 | 4 | 2 | |
| 64 | add | 20 | 18 | 16 | 14 | 12 | 10 | 8 | 6 | 4 | 2 | |
| 65 | add | 19 | 17 | 15 | 13 | 11 | 10 | 7 | 6 | 4 | 2 | |
| 66 | add | 18 | 16 | 14 | 12 | 10 | 10 | 7 | 6 | 4 | 2 | |
| 67 | add | 18 | 16 | 14 | 12 | 10 | 10 | 7 | 6 | 4 | 2 | |
| 68 | add | 17 | 15 | 13 | 12 | 10 | 8 | 7 | 5 | 3 | 2 | |
| 69 | add | 16 | 14 | 12 | 11 | 9 | 8 | 6 | 5 | 3 | 2 | |
| 70 | add | 14 | 13 | 11 | 10 | 8 | 7 | 6 | 4 | 3 | 1 | |
| 71 | add | 14 | 12 | 11 | 9 | 8 | 7 | 5 | 4 | 3 | 1 | |
| 72 | add | 13 | 12 | 10 | 9 | 8 | 7 | 5 | 4 | 3 | 2 | |
| 73 | add | 11 | 10 | 9 | 8 | 7 | 6 | 4 | 3 | 2 | 1 | |
| 74 | add | 9 | 8 | 7 | 6 | 5 | 5 | 3 | 3 | 2 | 1 | |
| 75 | add | 8 | 7 | 6 | 5 | 5 | 4 | 3 | 2 | 2 | 1 | |

Tab. 5. For Stand. Casks of the 5 Diam. Variety.

| Indexes of the 5 Diam Var. | | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 Var | 2 Var | 3 Var | 4 Var | 5 Var | 6 Var | 7 Var | 8 Var | 9 Var | 10 Var | 11 Var |
| 81 | | 822 | 828 | 831 | 834 | 837 | 839 | 842 | 845 | 848 | 851 | 854 |
| 82 | | 831 | 836 | 839 | 842 | 844 | 847 | 850 | 853 | 855 | 858 | 861 |
| 83 | | 840 | 844 | 847 | 849 | 852 | 854 | 857 | 860 | 862 | 865 | 867 |
| 84 | | 849 | 853 | 855 | 858 | 860 | 863 | 865 | 868 | 870 | 873 | 875 |
| Height of the Seg. | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif |
| 76 | add | 12 | 11 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 |
| 77 | add | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 6 | 5 | 5 |
| 78 | add | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 6 | 5 | 5 |
| 79 | add | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 |
| 80 | | | | | | | | | | | | |
| 81 | ſub | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 |
| 82 | ſub | 7 | 6 | 6 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 3 |
| 83 | ſub | 9 | 8 | 8 | 7 | 7 | 6 | 6 | 6 | 5 | 5 | 4 |
| 84 | ſub | 12 | 11 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 |
| 85 | ſub | 14 | 13 | 12 | 12 | 11 | 10 | 10 | 9 | 8 | 8 | 7 |
| 86 | ſub | 17 | 15 | 14 | 14 | 13 | 12 | 11 | 11 | 10 | 9 | 8 |
| 87 | ſub | 18 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 | 10 | 9 |
| 88 | ſub | 20 | 18 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 |
| 89 | ſub | 22 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 |
| 90 | ſub | 22 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 |
| 91 | ſub | 22 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 |
| 92 | ſub | 22 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 |
| 93 | ſub | 21 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 |
| 94 | ſub | 20 | 18 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 |
| 95 | ſub | 19 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 | 9 |
| 96 | ſub | 17 | 15 | 14 | 14 | 13 | 12 | 11 | 11 | 10 | 9 | 8 |
| 97 | ſub | 13 | 12 | 11 | 11 | 10 | 10 | 9 | 8 | 8 | 7 | 7 |
| 98 | ſub | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 6 | 5 | 5 |
| 99 | ſub | 4 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 2 | 2 |

Tab. 5. For Stand. Casks of the 5 Diam. Variety.

| Indexes of the 5 Diam Var. | | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 12 Var | 13 Var | 14 Var | 15 Var | 16 Var | 17 Var | 18 Var | 19 Var | 20 Var | 21 Var | 22 Var |
| 81 | | 857 | 859 | 862 | 865 | 868 | 871 | 874 | 876 | 879 | 882 | 885 |
| 82 | | 864 | 866 | 869 | 872 | 875 | 877 | 880 | 883 | 886 | 888 | 891 |
| 83 | | 870 | 873 | 875 | 878 | 880 | 883 | 886 | 888 | 891 | 893 | 896 |
| 84 | | 878 | 880 | 882 | 885 | 887 | 890 | 892 | 895 | 897 | 900 | 902 |
| Height of the Seg- | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | |
| 76 | add | 6 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | |
| 77 | add | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | | |
| 78 | add | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | | |
| 79 | add | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 80 | | | | | | | | | | | | |
| 81 | ſub | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 82 | ſub | 3 | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | | |
| 83 | ſub | 4 | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 | |
| 84 | ſub | 6 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | |
| 85 | ſub | 7 | 6 | 5 | 5 | 4 | 3 | 3 | 2 | 1 | 1 | |
| 86 | ſub | 8 | 7 | 6 | 5 | 5 | 4 | 3 | 2 | 2 | 1 | |
| 87 | ſub | 8 | 7 | 6 | 6 | 5 | 4 | 3 | 2 | 2 | 1 | |
| 88 | ſub | 9 | 8 | 7 | 6 | 5 | 5 | 3 | 3 | 2 | 1 | |
| 89 | ſub | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 90 | ſub | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 91 | ſub | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 92 | ſub | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 93 | ſub | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 94 | ſub | 9 | 8 | 7 | 6 | 5 | 5 | 3 | 3 | 2 | 1 | |
| 95 | ſub | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 3 | 2 | 1 | |
| 96 | ſub | 8 | 7 | 6 | 5 | 5 | 4 | 3 | 2 | 2 | 1 | |
| 97 | ſub | 6 | 5 | 5 | 4 | 4 | 3 | 2 | 2 | 1 | 1 | |
| 98 | ſub | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | | |
| 99 | ſub | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | | | |

Tab. 6. For Stand. Casks of the 6 Diam. Variety.

| Indexes of the 6 Diam Var. | | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 Var | 2 Var | 3 Var | 4 Var | 5 Var | 6 Var | 7 Var | 8 Var | 9 Var | 10 Var | 11 Var |
| 85 | | 857 | 861 | 863 | 866 | 868 | 870 | 872 | 875 | 877 | 879 | 882 |
| 86 | | 866 | 870 | 872 | 874 | 876 | 879 | 881 | 883 | 885 | 887 | 889 |
| 87 | | 876 | 878 | 880 | 882 | 884 | 886 | 888 | 890 | 892 | 894 | 896 |
| 88 | | 885 | 887 | 889 | 891 | 893 | 895 | 897 | 898 | 900 | 902 | 904 |
| Height of the Seg- | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif |
| 1 | add | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 |
| 2 | add | 8 | 7 | 7 | 6 | 6 | 6 | 5 | 5 | 5 | 4 | 4 |
| 3 | add | 11 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 6 |
| 4 | add | 13 | 12 | 11 | 11 | 10 | 10 | 9 | 8 | 8 | 7 | 7 |
| 5 | add | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 11 | 10 | 9 | 8 |
| 6 | add | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 11 | 10 | 9 | 8 |
| 7 | add | 18 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 | 10 | 9 |
| 8 | add | 18 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 | 9 |
| 9 | add | 18 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 | 9 |
| 10 | add | 18 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 | 9 |
| 11 | add | 18 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 | 9 |
| 12 | add | 18 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 | 10 | 9 |
| 13 | add | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 11 | 10 | 9 | 8 |
| 14 | add | 14 | 13 | 12 | 12 | 11 | 10 | 10 | 9 | 8 | 8 | 7 |
| 15 | add | 14 | 13 | 12 | 12 | 11 | 10 | 10 | 9 | 8 | 8 | 7 |
| 16 | add | 12 | 11 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 |
| 17 | add | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 6 | 5 | 5 |
| 18 | add | 8 | 7 | 7 | 6 | 6 | 6 | 5 | 5 | 5 | 4 | 4 |
| 19 | add | 6 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 3 | 3 | 3 |
| 20 | add | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 |
| 21 | | | | | | | | | | | | |
| 22 | ſub | 4 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 |
| 23 | ſub | 6 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 3 | 3 | 3 |
| 24 | ſub | 8 | 7 | 7 | 6 | 6 | 6 | 5 | 5 | 5 | 4 | 4 |
| 25 | ſub | 9 | 8 | 8 | 7 | 7 | 6 | 6 | 6 | 5 | 5 | 4 |

### Tab. 6. For Stand. Casks of the 6 Diam. Variety.

| Indexes of the 6 Diam Var. | | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 12 Var | 13 Var | 14 Var | 15 Var | 16 Var | 17 Var | 18 Var | 19 Var | 20 Var | 21 Var | 22 Var |
| 85 | | 884 | 886 | 889 | 891 | 893 | 896 | 898 | 900 | 902 | 905 | 907 |
| 86 | | 892 | 894 | 896 | 898 | 900 | 902 | 904 | 907 | 909 | 911 | 913 |
| 87 | | 899 | 901 | 903 | 905 | 907 | 909 | 911 | 913 | 915 | 917 | 919 |
| 88 | | 906 | 908 | 910 | 912 | 914 | 916 | 917 | 919 | 921 | 923 | 925 |
| Height of the Seg. | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | |
| 1 | add | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 2 | add | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 | | |
| 3 | add | 5 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | |
| 4 | add | 6 | 5 | 5 | 4 | 4 | 3 | 2 | 2 | 1 | 1 | |
| 5 | add | 8 | 7 | 6 | 5 | 5 | 4 | 3 | 2 | 2 | 1 | |
| 6 | add | 8 | 7 | 6 | 5 | 5 | 4 | 3 | 2 | 2 | 1 | |
| 7 | add | 8 | 7 | 6 | 6 | 5 | 4 | 3 | 2 | 2 | 1 | |
| 8 | add | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 3 | 2 | 1 | |
| 9 | add | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 3 | 2 | 1 | |
| 10 | add | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 3 | 2 | 1 | |
| 11 | add | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 3 | 2 | 1 | |
| 12 | add | 8 | 7 | 6 | 6 | 5 | 4 | 3 | 2 | 2 | 1 | |
| 13 | add | 8 | 7 | 6 | 5 | 5 | 4 | 3 | 2 | 2 | 1 | |
| 14 | add | 7 | 6 | 5 | 5 | 4 | 3 | 3 | 2 | 1 | 1 | |
| 15 | add | 7 | 6 | 5 | 5 | 4 | 3 | 3 | 2 | 1 | 1 | |
| 16 | add | 6 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | |
| 17 | add | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | | |
| 18 | add | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 | | |
| 19 | add | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | | |
| 20 | add | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 21 | | | | | | | | | | | | |
| 22 | ſub | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 23 | ſub | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | | |
| 24 | ſub | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 | | |
| 25 | ſub | 4 | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | | |

Tab. 6. For Stand. Casks of the 6 Diam. Variety.

| Indexes of the 6 Diam Var. | | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 Var | 2 Var | 3 Var | 4 Var | 5 Var | 6 Var | 7 Var | 8 Var | 9 Var | 10 Var | 11 Var |
| 85 | | 857 | 861 | 863 | 866 | 868 | 870 | 872 | 875 | 877 | 879 | 882 |
| 86 | | 866 | 870 | 872 | 874 | 876 | 879 | 881 | 883 | 885 | 887 | 889 |
| 87 | | 876 | 878 | 880 | 882 | 884 | 886 | 888 | 890 | 892 | 894 | 896 |
| 88 | | 885 | 887 | 889 | 891 | 893 | 895 | 897 | 898 | 900 | 902 | 904 |
| Height of the Seg. | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif |
| 26 | ſub | 12 | 11 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 |
| 27 | ſub | 15 | 14 | 13 | 13 | 12 | 11 | 11 | 10 | 9 | 9 | 8 |
| 28 | ſub | 18 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 | 9 |
| 29 | ſub | 21 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 |
| 30 | ſub | 22 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 |
| 31 | ſub | 24 | 22 | 21 | 20 | 19 | 18 | 17 | 15 | 14 | 13 | 12 |
| 32 | ſub | 26 | 24 | 23 | 22 | 20 | 19 | 18 | 17 | 16 | 14 | 13 |
| 33 | ſub | 28 | 26 | 25 | 23 | 22 | 21 | 20 | 18 | 17 | 16 | 14 |
| 34 | ſub | 28 | 26 | 25 | 23 | 22 | 21 | 20 | 18 | 17 | 16 | 14 |
| 35 | ſub | 30 | 28 | 27 | 25 | 24 | 22 | 21 | 20 | 18 | 17 | 15 |
| 36 | ſub | 30 | 28 | 27 | 25 | 24 | 22 | 21 | 20 | 18 | 17 | 15 |
| 37 | ſub | 31 | 29 | 27 | 26 | 24 | 23 | 22 | 20 | 19 | 17 | 16 |
| 38 | ſub | 32 | 30 | 29 | 27 | 26 | 24 | 23 | 21 | 20 | 18 | 17 |
| 39 | ſub | 31 | 29 | 27 | 26 | 24 | 23 | 22 | 20 | 19 | 17 | 16 |
| 40 | ſub | 31 | 29 | 27 | 26 | 24 | 23 | 22 | 20 | 19 | 17 | 16 |
| 41 | ſub | 30 | 28 | 27 | 25 | 24 | 22 | 21 | 20 | 18 | 17 | 15 |
| 42 | ſub | 29 | 27 | 26 | 24 | 23 | 22 | 20 | 19 | 18 | 16 | 15 |
| 43 | ſub | 27 | 25 | 24 | 23 | 22 | 20 | 19 | 18 | 17 | 15 | 14 |
| 44 | ſub | 26 | 24 | 23 | 22 | 20 | 19 | 18 | 17 | 16 | 14 | 13 |
| 45 | ſub | 23 | 21 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 |
| 46 | ſub | 19 | 18 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 |
| 47 | ſub | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 11 | 10 | 9 | 8 |
| 48 | ſub | 12 | 11 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 |
| 49 | ſub | 8 | 7 | 7 | 6 | 6 | 6 | 5 | 5 | 5 | 4 | 4 |

## Tab. 6. For Stand. Casks of the 6 Diam. Variety.

| Indexes of the 6 Diam Var. | | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 12 Var | 13 Var | 14 Var | 15 Var | 16 Var | 17 Var | 18 Var | 19 Var | 20 Var | 21 Var | 22 Var |
| 85 | | 884 | 886 | 889 | 891 | 893 | 896 | 898 | 900 | 902 | 905 | 907 |
| 86 | | 892 | 894 | 896 | 898 | 900 | 902 | 904 | 907 | 909 | 911 | 913 |
| 87 | | 899 | 901 | 903 | 905 | 907 | 909 | 911 | 913 | 915 | 917 | 919 |
| 88 | | 906 | 908 | 910 | 912 | 914 | 916 | 917 | 919 | 921 | 923 | 925 |
| Height of the Seg. | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | |
| 26 | ſub | 6 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | |
| 27 | ſub | 7 | 6 | 6 | 5 | 4 | 4 | 3 | 2 | 1 | 1 | |
| 28 | ſub | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 3 | 2 | 1 | |
| 29 | ſub | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 30 | ſub | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 31 | ſub | 11 | 10 | 9 | 8 | 7 | 6 | 4 | 3 | 2 | 1 | |
| 32 | ſub | 12 | 11 | 10 | 8 | 7 | 6 | 5 | 4 | 2 | 1 | |
| 33 | ſub | 13 | 12 | 10 | 9 | 8 | 7 | 5 | 4 | 3 | 1 | |
| 34 | ſub | 13 | 12 | 10 | 9 | 8 | 7 | 5 | 4 | 3 | 1 | |
| 35 | ſub | 14 | 13 | 11 | 10 | 8 | 7 | 6 | 4 | 3 | 1 | |
| 36 | ſub | 14 | 13 | 11 | 10 | 8 | 7 | 6 | 4 | 3 | 1 | |
| 37 | ſub | 14 | 13 | 11 | 10 | 8 | 7 | 6 | 4 | 3 | 1 | |
| 38 | ſub | 15 | 14 | 12 | 11 | 9 | 8 | 6 | 5 | 3 | 2 | |
| 39 | ſub | 14 | 13 | 11 | 10 | 8 | 7 | 6 | 4 | 3 | 1 | |
| 40 | ſub | 14 | 13 | 11 | 10 | 8 | 7 | 6 | 4 | 3 | 1 | |
| 41 | ſub | 14 | 13 | 11 | 10 | 8 | 7 | 6 | 4 | 3 | 1 | |
| 42 | ſub | 14 | 12 | 11 | 9 | 8 | 7 | 5 | 4 | 3 | 1 | |
| 43 | ſub | 13 | 12 | 10 | 9 | 8 | 7 | 5 | 4 | 3 | 2 | |
| 44 | ſub | 12 | 11 | 10 | 8 | 7 | 6 | 5 | 4 | 2 | 1 | |
| 45 | ſub | 11 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 46 | ſub | 9 | 8 | 7 | 6 | 5 | 5 | 3 | 3 | 2 | 1 | |
| 47 | ſub | 8 | 7 | 6 | 5 | 5 | 4 | 3 | 2 | 2 | 1 | |
| 48 | ſub | 6 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | |
| 49 | ſub | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 | | |

## Tab. 6. For Stand. Casks of the 6 Diam. Variety.

| Indexes of the 6 Diam Var. | | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 Var | 2 Var | 3 Var | 4 Var | 5 Var | 6 Var | 7 Var | 8 Var | 9 Var | 10 Var | 11 Var |
| 85 | | 857 | 861 | 863 | 866 | 868 | 870 | 872 | 875 | 877 | 879 | 882 |
| 86 | | 866 | 870 | 872 | 874 | 876 | 879 | 881 | 883 | 885 | 887 | 889 |
| 87 | | 876 | 878 | 880 | 882 | 884 | 886 | 888 | 890 | 892 | 894 | 896 |
| 88 | | 885 | 887 | 889 | 891 | 893 | 895 | 897 | 898 | 900 | 902 | 904 |
| Height of the Seg. | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif |
| 51 | add | 8 | 7 | 7 | 6 | 6 | 6 | 5 | 5 | 5 | 4 | 4 |
| 52 | add | 12 | 11 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 |
| 53 | add | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 11 | 10 | 9 | 8 |
| 54 | add | 19 | 18 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 |
| 55 | add | 23 | 21 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 |
| 56 | add | 26 | 24 | 23 | 22 | 20 | 19 | 18 | 17 | 16 | 14 | 13 |
| 57 | add | 27 | 25 | 24 | 23 | 22 | 20 | 19 | 18 | 17 | 15 | 14 |
| 58 | add | 29 | 27 | 26 | 24 | 23 | 22 | 20 | 19 | 18 | 16 | 15 |
| 59 | add | 30 | 28 | 27 | 25 | 24 | 22 | 21 | 20 | 18 | 17 | 15 |
| 60 | add | 31 | 29 | 27 | 26 | 24 | 23 | 22 | 20 | 19 | 17 | 16 |
| 61 | add | 31 | 29 | 27 | 26 | 24 | 23 | 22 | 20 | 19 | 17 | 16 |
| 62 | add | 32 | 30 | 29 | 27 | 26 | 24 | 23 | 21 | 20 | 18 | 17 |
| 63 | add | 31 | 29 | 27 | 26 | 24 | 23 | 22 | 20 | 19 | 17 | 16 |
| 64 | add | 30 | 28 | 27 | 25 | 24 | 22 | 21 | 20 | 18 | 17 | 15 |
| 65 | add | 30 | 28 | 27 | 25 | 24 | 22 | 21 | 20 | 18 | 17 | 15 |
| 66 | add | 28 | 26 | 25 | 23 | 22 | 21 | 20 | 18 | 17 | 16 | 14 |
| 67 | add | 28 | 26 | 25 | 23 | 22 | 21 | 20 | 18 | 17 | 16 | 14 |
| 68 | add | 26 | 24 | 23 | 22 | 20 | 19 | 18 | 17 | 16 | 14 | 13 |
| 69 | add | 24 | 22 | 21 | 20 | 19 | 18 | 17 | 15 | 14 | 13 | 12 |
| 70 | add | 22 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 |
| 71 | add | 21 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 |
| 72 | add | 18 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 | 9 |
| 73 | add | 15 | 14 | 13 | 13 | 12 | 11 | 11 | 10 | 9 | 9 | 8 |
| 74 | add | 12 | 11 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 |
| 75 | add | 9 | 8 | 8 | 7 | 7 | 6 | 6 | 6 | 5 | 5 | 4 |

## Tab. 6. For Stand. Casks of the 6 Diam. Variety.

| Indexes of the 6 Diam Var. | | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 12 Var | 13 Var | 14 Var | 15 Var | 16 Var | 17 Var | 18 Var | 19 Var | 20 Var | 21 Var | 22 Var |
| 85 | | 884 | 886 | 889 | 891 | 893 | 896 | 898 | 900 | 902 | 905 | 907 |
| 86 | | 892 | 894 | 896 | 898 | 900 | 902 | 904 | 907 | 909 | 911 | 913 |
| 87 | | 899 | 901 | 903 | 905 | 907 | 909 | 911 | 913 | 915 | 917 | 919 |
| 88 | | 906 | 908 | 910 | 912 | 914 | 916 | 917 | 919 | 921 | 923 | 925 |
| Height of the Seg. | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | |
| 51 | add | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 | | |
| 52 | add | 6 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | |
| 53 | add | 8 | 7 | 6 | 5 | 5 | 4 | 3 | 2 | 2 | 1 | |
| 54 | add | 9 | 8 | 7 | 6 | 5 | 5 | 3 | 3 | 2 | 1 | |
| 55 | add | 11 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 56 | add | 12 | 11 | 10 | 8 | 7 | 6 | 5 | 4 | 2 | 1 | |
| 57 | add | 13 | 12 | 10 | 9 | 8 | 7 | 5 | 4 | 3 | 2 | |
| 58 | add | 14 | 12 | 11 | 9 | 8 | 7 | 5 | 4 | 3 | 1 | |
| 59 | add | 14 | 13 | 11 | 10 | 8 | 7 | 6 | 4 | 3 | 1 | |
| 60 | add | 14 | 13 | 11 | 10 | 8 | 7 | 6 | 4 | 3 | 1 | |
| 61 | add | 14 | 13 | 11 | 10 | 8 | 7 | 6 | 4 | 3 | 1 | |
| 62 | add | 15 | 14 | 12 | 11 | 9 | 8 | 6 | 5 | 3 | 2 | |
| 63 | add | 14 | 13 | 11 | 10 | 8 | 7 | 6 | 4 | 3 | 1 | |
| 64 | add | 14 | 13 | 11 | 10 | 8 | 7 | 6 | 4 | 3 | 1 | |
| 65 | add | 14 | 13 | 11 | 10 | 8 | 7 | 6 | 4 | 3 | 1 | |
| 66 | add | 13 | 12 | 10 | 9 | 8 | 7 | 5 | 4 | 3 | 1 | |
| 67 | add | 13 | 12 | 10 | 9 | 8 | 7 | 5 | 4 | 3 | 1 | |
| 68 | add | 12 | 11 | 10 | 8 | 7 | 6 | 5 | 4 | 2 | 1 | |
| 69 | add | 11 | 10 | 9 | 8 | 7 | 6 | 4 | 3 | 2 | 1 | |
| 70 | add | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 71 | add | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 72 | add | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 3 | 2 | 1 | |
| 73 | add | 7 | 6 | 6 | 5 | 4 | 4 | 3 | 2 | 1 | 1 | |
| 74 | add | 6 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | |
| 75 | add | 4 | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | | |

Tab. 6. For Stand. Casks of the 6 Diam. Variety.

| Indexes of the 6 Diam Var. | | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 Var | 2 Var | 3 Var | 4 Var | 5 Var | 6 Var | 7 Var | 8 Var | 9 Var | 10 Var | 11 Var |
| 85 | | 857 | 861 | 863 | 866 | 868 | 870 | 872 | 875 | 877 | 879 | 882 |
| 86 | | 866 | 870 | 872 | 874 | 876 | 879 | 881 | 883 | 885 | 887 | 889 |
| 87 | | 876 | 878 | 880 | 882 | 884 | 886 | 888 | 890 | 892 | 894 | 896 |
| 88 | | 885 | 887 | 889 | 891 | 893 | 895 | 897 | 898 | 900 | 902 | 904 |
| Height of the Seg. | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif |
| 76 | add | 8 | 7 | 7 | 6 | 6 | 6 | 5 | 5 | 5 | 4 | 4 |
| 77 | add | 6 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 3 | 3 | 3 |
| 78 | add | 4 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 |
| 79 | | | | | | | | | | | | |
| 80 | ſub | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 |
| 81 | ſub | 6 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 3 | 3 | 3 |
| 82 | ſub | 8 | 7 | 7 | 6 | 6 | 6 | 5 | 5 | 5 | 4 | 4 |
| 83 | ſub | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 6 | 5 | 5 |
| 84 | ſub | 12 | 11 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 |
| 85 | ſub | 14 | 13 | 12 | 12 | 11 | 10 | 10 | 9 | 8 | 8 | 7 |
| 86 | ſub | 14 | 13 | 12 | 12 | 11 | 10 | 10 | 9 | 8 | 8 | 7 |
| 87 | ſub | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 11 | 10 | 9 | 8 |
| 88 | ſub | 18 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 | 10 | 9 |
| 89 | ſub | 18 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 | 9 |
| 90 | ſub | 18 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 | 9 |
| 91 | ſub | 18 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 | 9 |
| 92 | ſub | 18 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 | 9 |
| 93 | ſub | 18 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 | 10 | 9 |
| 94 | ſub | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 11 | 10 | 9 | 8 |
| 95 | ſub | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 11 | 10 | 9 | 8 |
| 96 | ſub | 13 | 12 | 11 | 11 | 10 | 10 | 9 | 8 | 8 | 7 | 7 |
| 97 | ſub | 11 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 6 |
| 98 | ſub | 8 | 7 | 7 | 6 | 6 | 6 | 5 | 5 | 5 | 4 | 4 |
| 99 | ſub | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 |

Tab. 6. For Stand. Casks of the 6 Diam. Variety.

| Indexes of the 6 Diam Var. | | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 12 Var | 13 Var | 14 Var | 15 Var | 16 Var | 17 Var | 18 Var | 19 Var | 20 Var | 21 Var | 22 Var |
| 85 | | 884 | 886 | 889 | 891 | 893 | 896 | 898 | 900 | 902 | 905 | 907 |
| 86 | | 892 | 894 | 896 | 898 | 900 | 902 | 904 | 907 | 909 | 911 | 913 |
| 87 | | 899 | 901 | 903 | 905 | 907 | 909 | 911 | 913 | 915 | 917 | 919 |
| 88 | | 906 | 908 | 910 | 912 | 914 | 916 | 917 | 919 | 921 | 923 | 925 |
| Height of the Seg- | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | |
| 76 | add | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 | | |
| 77 | add | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | | |
| 78 | add | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 79 | | | | | | | | | | | | |
| 80 | ſub | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 81 | ſub | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | | |
| 82 | ſub | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 | | |
| 83 | ſub | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | | |
| 84 | ſub | 6 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | |
| 85 | ſub | 7 | 6 | 5 | 5 | 4 | 3 | 3 | 2 | 1 | 1 | |
| 86 | ſub | 7 | 6 | 5 | 5 | 4 | 3 | 3 | 2 | 1 | 1 | |
| 87 | ſub | 8 | 7 | 6 | 5 | 5 | 4 | 3 | 2 | 2 | 1 | |
| 88 | ſub | 8 | 7 | 6 | 6 | 5 | 4 | 3 | 2 | 2 | 1 | |
| 89 | ſub | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 3 | 2 | 1 | |
| 90 | ſub | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 3 | 2 | 1 | |
| 91 | ſub | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 3 | 2 | 1 | |
| 92 | ſub | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 3 | 2 | 1 | |
| 93 | ſub | 8 | 7 | 6 | 6 | 5 | 4 | 3 | 2 | 2 | 1 | |
| 94 | ſub | 8 | 7 | 6 | 5 | 5 | 4 | 3 | 2 | 2 | 1 | |
| 95 | ſub | 8 | 7 | 6 | 5 | 5 | 4 | 3 | 2 | 2 | 1 | |
| 96 | ſub | 6 | 5 | 5 | 4 | 4 | 3 | 2 | 2 | 1 | 1 | |
| 97 | ſub | 5 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | |
| 98 | ſub | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 | | |
| 99 | ſub | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |

## Tab. 7. For Stand. Casks of the 7 Diam. Variety.

| Indexes of the 7 Diam Var. | | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 Var | 2 Var | 3 Var | 4 Var | 5 Var | 6 Var | 7 Var | 8 Var | 9 Var | 10 Var | 11 Var |
| 89 | | 894 | 896 | 898 | 900 | 901 | 903 | 905 | 907 | 908 | 910 | 912 |
| 90 | | 903 | 905 | 907 | 908 | 910 | 911 | 913 | 915 | 916 | 618 | 919 |
| 91 | | 913 | 914 | 915 | 917 | 918 | 920 | 921 | 923 | 924 | 926 | 927 |
| 92 | | 922 | 923 | 924 | 926 | 927 | 928 | 930 | 931 | 932 | 933 | 935 |
| Height of the Seg- | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif |
| 1 | add | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 |
| 2 | add | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 3 | 3 | 3 |
| 3 | add | 7 | 7 | 7 | 6 | 6 | 6 | 5 | 5 | 5 | 4 | 4 |
| 4 | add | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 6 | 5 | 5 |
| 5 | add | 12 | 11 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 |
| 6 | add | 13 | 12 | 11 | 11 | 10 | 10 | 9 | 8 | 8 | 7 | 7 |
| 7 | add | 14 | 13 | 12 | 12 | 11 | 10 | 10 | 9 | 8 | 8 | 7 |
| 8 | add | 14 | 13 | 12 | 12 | 11 | 10 | 10 | 9 | 8 | 8 | 7 |
| 9 | add | 15 | 14 | 13 | 13 | 12 | 11 | 11 | 10 | 9 | 9 | 8 |
| 10 | add | 14 | 13 | 12 | 12 | 11 | 10 | 10 | 9 | 8 | 8 | 7 |
| 11 | add | 14 | 13 | 12 | 12 | 11 | 10 | 10 | 9 | 8 | 8 | 7 |
| 12 | add | 14 | 13 | 12 | 12 | 11 | 10 | 10 | 9 | 8 | 8 | 7 |
| 13 | add | 13 | 12 | 11 | 11 | 10 | 10 | 9 | 8 | 8 | 7 | 7 |
| 14 | add | 12 | 11 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 |
| 15 | add | 12 | 11 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 |
| 16 | add | 11 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 6 |
| 17 | add | 9 | 8 | 8 | 7 | 7 | 6 | 6 | 6 | 5 | 5 | 4 |
| 18 | add | 7 | 7 | 7 | 6 | 6 | 6 | 5 | 5 | 5 | 4 | 4 |
| 19 | add | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 3 | 3 | 3 |
| 20 | add | 4 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 2 | 2 |
| 21 | add | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 |
| 22 | add | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 23 | ſub | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 24 | ſub | 4 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 2 | 2 |
| 25 | ſub | 4 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 2 | 2 |

Tab. 7. For Stand. Casks of the 7 Diam. Variety.

| Indexes of the 7 Diam Var. | | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 12 Var | 13 Var | 14 Var | 15 Var | 16 Var | 17 Var | 18 Var | 19 Var | 20 Var | 21 Var | 22 Var |
| 89 | | 914 | 915 | 917 | 919 | 921 | 922 | 924 | 926 | 928 | 929 | 931 |
| 90 | | 921 | 923 | 924 | 926 | 927 | 929 | 931 | 932 | 934 | 935 | 937 |
| 91 | | 929 | 930 | 931 | 933 | 934 | 936 | 937 | 939 | 940 | 942 | 943 |
| 92 | | 936 | 937 | 939 | 940 | 941 | 943 | 944 | 945 | 946 | 948 | 949 |
| Height of the Seg. | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | |
| 1 | add | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 2 | add | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | | |
| 3 | add | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 | | |
| 4 | add | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | | |
| 5 | add | 6 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | |
| 6 | add | 6 | 5 | 5 | 4 | 4 | 3 | 2 | 2 | 1 | 1 | |
| 7 | add | 7 | 6 | 5 | 5 | 4 | 3 | 3 | 2 | 1 | 1 | |
| 8 | add | 7 | 6 | 5 | 5 | 4 | 3 | 3 | 2 | 1 | 1 | |
| 9 | add | 7 | 6 | 6 | 5 | 4 | 4 | 3 | 2 | 1 | 1 | |
| 10 | add | 7 | 6 | 5 | 5 | 4 | 3 | 3 | 2 | 1 | 1 | |
| 11 | add | 7 | 6 | 5 | 5 | 4 | 3 | 3 | 2 | 1 | 1 | |
| 12 | add | 7 | 6 | 5 | 5 | 4 | 3 | 3 | 2 | 1 | 1 | |
| 13 | add | 6 | 5 | 5 | 4 | 4 | 3 | 2 | 2 | 1 | 1 | |
| 14 | add | 6 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | |
| 15 | add | 6 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | |
| 16 | add | 5 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | |
| 17 | add | 4 | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | | |
| 18 | add | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 | | |
| 19 | add | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | | |
| 20 | add | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | | | |
| 21 | add | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 22 | add | 1 | | | | | | | | | | |
| 23 | ſub | 1 | | | | | | | | | | |
| 24 | ſub | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | | | |
| 25 | ſub | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | | | |

Tab. 7. For Stand. Casks of the 7 Diam. Variety.

| Indexes of the 7 Diam Var. | | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 Var | 2 Var | 3 Var | 4 Var | 5 Var | 6 Var | 7 Var | 8 Var | 9 Var | 10 Var | 11 Var |
| 89 | | 894 | 896 | 898 | 900 | 901 | 903 | 905 | 907 | 908 | 910 | 912 |
| 90 | | 903 | 905 | 907 | 908 | 910 | 911 | 913 | 915 | 916 | 918 | 919 |
| 91 | | 913 | 914 | 915 | 917 | 918 | 920 | 921 | 923 | 924 | 926 | 927 |
| 92 | | 922 | 923 | 924 | 926 | 927 | 928 | 930 | 931 | 932 | 933 | 935 |
| Height of the Seg. | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif |
| 26 | ſub | 6 | 6 | 6 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 3 |
| 27 | ſub | 9 | 8 | 8 | 7 | 7 | 6 | 6 | 6 | 5 | 5 | 4 |
| 28 | ſub | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 6 | 5 | 5 |
| 29 | ſub | 12 | 11 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 |
| 30 | ſub | 13 | 12 | 11 | 11 | 10 | 10 | 9 | 8 | 8 | 7 | 7 |
| 31 | ſub | 15 | 14 | 13 | 13 | 12 | 11 | 11 | 10 | 9 | 9 | 8 |
| 32 | ſub | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 11 | 10 | 9 | 8 |
| 33 | ſub | 18 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 | 9 |
| 34 | ſub | 18 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 | 9 |
| 35 | ſub | 18 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 | 9 |
| 36 | ſub | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 |
| 37 | ſub | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 |
| 38 | ſub | 21 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 |
| 39 | ſub | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 |
| 40 | ſub | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 |
| 41 | ſub | 19 | 18 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 |
| 42 | ſub | 18 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 | 9 |
| 43 | ſub | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 | 10 | 9 |
| 44 | ſub | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 11 | 10 | 9 | 8 |
| 45 | ſub | 14 | 13 | 12 | 12 | 11 | 10 | 10 | 9 | 8 | 8 | 7 |
| 46 | ſub | 13 | 12 | 11 | 11 | 10 | 10 | 9 | 8 | 8 | 7 | 7 |
| 47 | ſub | 11 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 6 |
| 48 | ſub | 7 | 6 | 6 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 3 |
| 49 | ſub | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 |

### Tab. 7. For Stand. Casks of the 7 Diam. Variety.

| Indexes of the 7 Diam Var. | | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 12 Var | 13 Var | 14 Var | 15 Var | 16 Var | 17 Var | 18 Var | 19 Var | 20 Var | 21 Var | 22 Var |
| 89 | | 914 | 915 | 917 | 919 | 921 | 922 | 924 | 926 | 928 | 929 | 931 |
| 90 | | 921 | 923 | 924 | 926 | 917 | 929 | 931 | 932 | 934 | 935 | 937 |
| 91 | | 929 | 930 | 931 | 933 | 934 | 936 | 937 | 939 | 940 | 942 | 943 |
| 92 | | 936 | 937 | 939 | 940 | 941 | 943 | 944 | 945 | 946 | 948 | 949 |
| Height of the Seg. | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | |
| 26 | ſub | 3 | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | | |
| 27 | ſub | 4 | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | | |
| 28 | ſub | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | | |
| 29 | ſub | 6 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | |
| 30 | ſub | 6 | 5 | 5 | 4 | 4 | 3 | 2 | 2 | 1 | 1 | |
| 31 | ſub | 7 | 6 | 6 | 5 | 4 | 4 | 3 | 2 | 1 | 1 | |
| 32 | ſub | 8 | 7 | 6 | 5 | 5 | 4 | 3 | 2 | 2 | 1 | |
| 33 | ſub | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 3 | 2 | 1 | |
| 34 | ſub | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 3 | 2 | 1 | |
| 35 | ſub | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 3 | 2 | 1 | |
| 36 | ſub | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 37 | ſub | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 38 | ſub | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 39 | ſub | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 40 | ſub | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 41 | ſub | 9 | 8 | 7 | 6 | 5 | 5 | 3 | 3 | 2 | 1 | |
| 42 | ſub | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 3 | 2 | 1 | |
| 43 | ſub | 8 | 7 | 6 | 6 | 5 | 4 | 3 | 2 | 2 | 1 | |
| 44 | ſub | 8 | 7 | 6 | 5 | 5 | 4 | 3 | 2 | 2 | 1 | |
| 45 | ſub | 7 | 6 | 5 | 5 | 4 | 3 | 3 | 2 | 1 | 1 | |
| 46 | ſub | 6 | 5 | 5 | 4 | 4 | 3 | 2 | 2 | 1 | 1 | |
| 47 | ſub | 5 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | |
| 48 | ſub | 3 | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | | |
| 49 | ſub | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |

## Tab. 7. For Stand. Casks of the 7 Diam. Variety.

| Indexes of the 7 Diam Var. | | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 Var | 2 Var | 3 Var | 4 Var | 5 Var | 6 Var | 7 Var | 8 Var | 9 Var | 10 Var | 11 Var |
| 89 | | 894 | 896 | 898 | 900 | 901 | 903 | 905 | 907 | 908 | 910 | 912 |
| 90 | | 903 | 905 | 907 | 908 | 910 | 911 | 913 | 915 | 916 | 918 | 919 |
| 91 | | 913 | 914 | 915 | 917 | 918 | 920 | 921 | 923 | 924 | 926 | 927 |
| 92 | | 922 | 923 | 924 | 926 | 927 | 928 | 930 | 931 | 932 | 933 | 935 |
| Height of the Seg- | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif |
| 51 | add | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 |
| 52 | add | 7 | 6 | 6 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 3 |
| 53 | add | 11 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 6 |
| 54 | add | 13 | 12 | 11 | 11 | 10 | 10 | 9 | 8 | 8 | 7 | 7 |
| 55 | add | 14 | 13 | 12 | 12 | 11 | 10 | 10 | 9 | 8 | 8 | 7 |
| 56 | add | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 11 | 10 | 9 | 8 |
| 57 | add | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 | 10 | 9 |
| 58 | add | 18 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 | 9 |
| 59 | add | 19 | 18 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 |
| 60 | add | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 |
| 61 | add | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 |
| 62 | add | 21 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 |
| 63 | add | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 |
| 64 | add | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 |
| 65 | add | 18 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 | 9 |
| 66 | add | 18 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 | 9 |
| 67 | add | 18 | 17 | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 10 | 9 |
| 68 | add | 16 | 15 | 14 | 14 | 13 | 12 | 11 | 11 | 10 | 9 | 8 |
| 69 | add | 15 | 14 | 13 | 13 | 12 | 11 | 11 | 10 | 9 | 9 | 8 |
| 70 | add | 13 | 12 | 11 | 11 | 10 | 10 | 9 | 8 | 8 | 7 | 7 |
| 71 | add | 12 | 11 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 |
| 72 | add | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 6 | 5 | 5 |
| 73 | add | 9 | 8 | 8 | 7 | 7 | 6 | 6 | 6 | 5 | 5 | 4 |
| 74 | add | 6 | 6 | 6 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 3 |
| 75 | add | 4 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 2 | 2 |

Tab. 7. For Stand. Casks of the 7 Diam. Variety.

| Indexes of the 7 Diam Var. | | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 12 Var | 13 Var | 14 Var | 15 Var | 16 Var | 17 Var | 18 Var | 19 Var | 20 Var | 21 Var | 22 Var |
| 89 | | 914 | 915 | 917 | 919 | 921 | 922 | 924 | 926 | 928 | 929 | 931 |
| 90 | | 921 | 923 | 924 | 926 | 927 | 929 | 931 | 932 | 934 | 935 | 937 |
| 91 | | 929 | 930 | 931 | 933 | 934 | 936 | 937 | 939 | 940 | 942 | 943 |
| 92 | | 936 | 937 | 939 | 940 | 941 | 943 | 944 | 945 | 946 | 948 | 949 |
| Height of the Seg- | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | |
| 51 | add | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 52 | add | 3 | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | | |
| 53 | add | 5 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | |
| 54 | add | 6 | 5 | 5 | 4 | 4 | 3 | 2 | 2 | 1 | 1 | |
| 55 | add | 7 | 6 | 5 | 5 | 4 | 3 | 3 | 2 | 1 | 1 | |
| 56 | add | 8 | 7 | 6 | 5 | 5 | 4 | 3 | 2 | 2 | 1 | |
| 57 | add | 8 | 7 | 6 | 6 | 5 | 4 | 3 | 2 | 2 | 1 | |
| 58 | add | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 3 | 2 | 1 | |
| 59 | add | 9 | 8 | 7 | 6 | 5 | 5 | 3 | 3 | 2 | 1 | |
| 60 | add | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 61 | add | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 62 | add | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 63 | add | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 64 | add | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
| 65 | add | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 3 | 2 | 1 | |
| 66 | add | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 3 | 2 | 1 | |
| 67 | add | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 3 | 2 | 1 | |
| 68 | add | 8 | 7 | 6 | 5 | 5 | 4 | 3 | 2 | 2 | 1 | |
| 69 | add | 7 | 6 | 6 | 5 | 4 | 4 | 3 | 2 | 1 | 1 | |
| 70 | add | 6 | 5 | 5 | 4 | 4 | 3 | 2 | 2 | 1 | 1 | |
| 71 | add | 6 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | |
| 72 | add | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | | |
| 73 | add | 4 | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | | |
| 74 | add | 3 | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | | |
| 75 | add | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | | | |

Tab. 7. For Stand. Casks of the 7 Diam. Variety.

| Indexes of the 7 Diam Var. | | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 Var | 2 Var | 3 Var | 4 Var | 5 Var | 6 Var | 7 Var | 8 Var | 9 Var | 10 Var | 11 Var |
| 89 | | 894 | 896 | 898 | 900 | 901 | 903 | 905 | 907 | 908 | 910 | 912 |
| 90 | | 903 | 905 | 907 | 908 | 910 | 911 | 913 | 915 | 916 | 918 | 919 |
| 91 | | 913 | 914 | 915 | 917 | 918 | 920 | 921 | 923 | 924 | 926 | 927 |
| 92 | | 922 | 923 | 924 | 926 | 927 | 928 | 930 | 931 | 932 | 933 | 935 |
| Height of the Seg. | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif |
| 76 | add | 4 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 2 | 2 |
| 77 | add | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 78 | ſub | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 79 | ſub | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 |
| 80 | ſub | 4 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 2 | 2 |
| 81 | ſub | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 3 | 3 | 3 |
| 82 | ſub | 7 | 7 | 7 | 6 | 6 | 6 | 5 | 5 | 5 | 4 | 4 |
| 83 | ſub | 9 | 8 | 8 | 7 | 7 | 6 | 6 | 6 | 5 | 5 | 4 |
| 84 | ſub | 11 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 6 |
| 85 | ſub | 12 | 11 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 |
| 86 | ſub | 12 | 11 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 |
| 87 | ſub | 13 | 12 | 11 | 11 | 10 | 10 | 9 | 8 | 8 | 7 | 7 |
| 88 | ſub | 14 | 13 | 12 | 12 | 11 | 10 | 10 | 9 | 8 | 8 | 7 |
| 89 | ſub | 14 | 13 | 12 | 12 | 11 | 10 | 10 | 9 | 8 | 8 | 7 |
| 90 | ſub | 14 | 13 | 12 | 12 | 11 | 10 | 10 | 9 | 8 | 8 | 7 |
| 91 | ſub | 15 | 14 | 13 | 13 | 12 | 11 | 11 | 10 | 9 | 9 | 8 |
| 92 | ſub | 14 | 13 | 12 | 12 | 11 | 10 | 10 | 9 | 8 | 8 | 7 |
| 93 | ſub | 14 | 13 | 12 | 12 | 11 | 10 | 10 | 9 | 8 | 8 | 7 |
| 94 | ſub | 13 | 12 | 11 | 11 | 10 | 10 | 9 | 8 | 8 | 7 | 7 |
| 95 | ſub | 12 | 11 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 |
| 96 | ſub | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 6 | 5 | 5 |
| 97 | ſub | 7 | 7 | 7 | 6 | 6 | 6 | 5 | 5 | 5 | 4 | 4 |
| 98 | ſub | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 3 | 3 | 3 |
| 99 | ſub | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 |

Tab. 7. For Stand. Casks of the 7 Diam. Variety.

| Indexes of the 7 Diam Var. | | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 12 Var | 13 Var | 14 Var | 15 Var | 16 Var | 17 Var | 18 Var | 19 Var | 20 Var | 21 Var | 22 Var |
| 89 | | 914 | 915 | 917 | 919 | 921 | 922 | 924 | 926 | 928 | 929 | 931 |
| 90 | | 921 | 923 | 924 | 926 | 927 | 929 | 931 | 932 | 934 | 935 | 937 |
| 91 | | 929 | 930 | 931 | 933 | 934 | 936 | 937 | 939 | 940 | 942 | 943 |
| 92 | | 936 | 937 | 939 | 940 | 941 | 943 | 944 | 945 | 946 | 948 | 949 |
| Height of the Seg- | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | |
| 76 | add | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | | | |
| 77 | add | 1 | | | | | | | | | | |
| 78 | ſub | 1 | | | | | | | | | | |
| 79 | ſub | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 80 | ſub | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | | | |
| 81 | ſub | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | | |
| 82 | ſub | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 | | |
| 83 | ſub | 4 | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | | |
| 84 | ſub | 5 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | | |
| 85 | ſub | 6 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | |
| 86 | ſub | 6 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | |
| 87 | ſub | 6 | 5 | 5 | 4 | 4 | 3 | 2 | 2 | 1 | 1 | |
| 88 | ſub | 7 | 6 | 5 | 5 | 4 | 3 | 3 | 2 | 1 | 1 | |
| 89 | ſub | 7 | 6 | 5 | 5 | 4 | 3 | 3 | 2 | 1 | 1 | |
| 90 | ſub | 7 | 6 | 5 | 5 | 4 | 3 | 3 | 2 | 1 | 1 | |
| 91 | ſub | 7 | 6 | 6 | 5 | 4 | 4 | 3 | 2 | 1 | 1 | |
| 92 | ſub | 7 | 6 | 5 | 5 | 4 | 3 | 3 | 2 | 1 | 1 | |
| 93 | ſub | 7 | 6 | 5 | 5 | 4 | 3 | 3 | 2 | 1 | 1 | |
| 94 | ſub | 6 | 5 | 5 | 4 | 4 | 3 | 2 | 2 | 1 | 1 | |
| 95 | ſub | 6 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | |
| 96 | ſub | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | | |
| 97 | ſub | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 | | |
| 98 | ſub | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | | |
| 99 | ſub | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |

Tab. 8. For Stand. Casks of the 8 Diam. Variety.

| Indexes of the 8 Diam Var. | | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 Var | 2 Var | 3 Var | 4 Var | 5 Var | 6 Var | 7 Var | 8 Var | 9 Var | 10 Var | 11 Var |
| 93 | | 93$^{2}$ | 93$^{2}$ | 933 | 934 | 935 | 937 | 93$^{8}$ | 939 | 94$^{0}$ | 94$^{1}$ | 94$^{2}$ |
| 94 | | 94$^{1}$ | 94$^{2}$ | 943 | 944 | 945 | 94$^{6}$ | 947 | 94$^{8}$ | 949 | 95$^{0}$ | 95$^{1}$ |
| 95 | | 95$^{1}$ | 95$^{1}$ | 95$^{2}$ | 953 | 953 | 954 | 955 | 95$^{6}$ | 957 | 957 | 95$^{8}$ |
| Height of the Seg- | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif |
| 1 | add | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 |
| 2 | add | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 |
| 3 | add | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 3 | 3 | 3 |
| 4 | add | 6 | 6 | 6 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 3 |
| 5 | add | 8 | 7 | 7 | 6 | 6 | 6 | 5 | 5 | 5 | 4 | 4 |
| 6 | add | 8 | 7 | 7 | 6 | 6 | 6 | 5 | 5 | 5 | 4 | 4 |
| 7 | add | 9 | 8 | 8 | 7 | 7 | 6 | 6 | 6 | 5 | 5 | 4 |
| 8 | add | 9 | 8 | 8 | 7 | 7 | 6 | 6 | 6 | 5 | 5 | 4 |
| 9 | add | 9 | 8 | 8 | 7 | 7 | 6 | 6 | 6 | 5 | 5 | 4 |
| 10 | add | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 6 | 5 | 5 |
| 11 | add | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 6 | 5 | 5 |
| 12 | add | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 6 | 5 | 5 |
| 13 | add | 8 | 7 | 7 | 6 | 6 | 6 | 5 | 5 | 5 | 4 | 4 |
| 14 | add | 8 | 7 | 7 | 6 | 6 | 6 | 5 | 5 | 5 | 4 | 4 |
| 15 | add | 8 | 7 | 7 | 6 | 6 | 6 | 5 | 5 | 5 | 4 | 4 |
| 16 | add | 8 | 7 | 7 | 6 | 6 | 6 | 5 | 5 | 5 | 4 | 4 |
| 17 | add | 6 | 6 | 6 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 3 |
| 18 | add | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 3 | 3 | 3 |
| 19 | add | 4 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 2 | 2 |
| 20 | add | 4 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 2 | 2 |
| 21 | add | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 |
| 22 | add | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 |
| 23 | | | | | | | | | | | | |
| 24 | ſub | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 25 | ſub | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 |

Tab. 8. For Stand. Casks of the 8 Diam. Variety.

| Indexes of the 8 Diam Var. | | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 12 Var | 13 Var | 14 Var | 15 Var | 16 Var | 17 Var | 18 Var. | 19 Var | 20 Var | 21 Var | 22 Var |
| 93 | | 944 | 945 | 946 | 947 | 948 | 949 | 950 | 952 | 953 | 954 | 955 |
| 94 | | 952 | 952 | 953 | 954 | 955 | 956 | 957 | 958 | 959 | 960 | 961 |
| 95 | | 959 | 960 | 961 | 961 | 962 | 963 | 964 | 965 | 965 | 966 | 967 |
| Height of the Seg. | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | | |
| 1 | add | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 2 | add | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 3 | add | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | | |
| 4 | add | 3 | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | | |
| 5 | add | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 | | |
| 6 | add | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 | | |
| 7 | add | 4 | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | | |
| 8 | add | 4 | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | | |
| 9 | add | 4 | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | | |
| 10 | add | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | | |
| 11 | add | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | | |
| 12 | add | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | | |
| 13 | add | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 | | |
| 14 | add | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 | | |
| 15 | add | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 | | |
| 16 | add | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 | | |
| 17 | add | 3 | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | | |
| 18 | add | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | | |
| 19 | add | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | | | |
| 20 | add | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | | | |
| 21 | add | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 22 | add | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 23 | | | | | | | | | | | | |
| 24 | ſub | 1 | | | | | | | | | | |
| 25 | ſub | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |

Tab. 8. For Stand. Casks of the 8 Diam. Variety.

| Indexes of the 8 DiamVar. | | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 Var | 2 Var | 3 Var | 4 Var | 5 Var | 6 Var | 7 Var | 8 Var | 9 Var | 10 Var | 11 Var |
| 93 | | 932 | 932 | 933 | 934 | 935 | 937 | 938 | 939 | 940 | 941 | 942 |
| 94 | | 941 | 942 | 943 | 944 | 945 | 946 | 947 | 948 | 949 | 950 | 951 |
| 95 | | 951 | 951 | 952 | 953 | 953 | 954 | 955 | 956 | 957 | 957 | 958 |
| Height of the Seg. | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif |
| 26 | ſub | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 |
| 27 | ſub | 4 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 2 | 2 |
| 28 | ſub | 4 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 2 | 2 |
| 29 | ſub | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 3 | 3 | 3 |
| 30 | ſub | 6 | 6 | 6 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 3 |
| 31 | ſub | 8 | 7 | 7 | 6 | 6 | 6 | 5 | 5 | 5 | 4 | 4 |
| 32 | ſub | 9 | 8 | 8 | 7 | 7 | 6 | 6 | 6 | 5 | 5 | 4 |
| 33 | ſub | 9 | 8 | 8 | 7 | 7 | 6 | 6 | 6 | 5 | 5 | 4 |
| 34 | ſub | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 6 | 5 | 5 |
| 35 | ſub | 11 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 6 |
| 36 | ſub | 11 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 6 |
| 37 | ſub | 11 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 6 |
| 38 | ſub | 12 | 11 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 |
| 39 | ſub | 12 | 11 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 |
| 40 | ſub | 12 | 11 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 |
| 41 | ſub | 11 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 6 |
| 42 | ſub | 11 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 6 |
| 43 | ſub | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 6 | 5 | 5 |
| 44 | ſub | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 6 | 5 | 5 |
| 45 | ſub | 9 | 8 | 8 | 7 | 7 | 6 | 6 | 6 | 5 | 5 | 4 |
| 46 | ſub | 6 | 6 | 6 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 3 |
| 47 | ſub | 6 | 6 | 6 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 3 |
| 48 | ſub | 4 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 2 | 2 |
| 49 | ſub | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 |

## Tab. 8. For Stand. Casks of the 8 Diam. Variety.

| Indexes of the 8 Diam Var. | Indexes of the Varieties of Curvature. 12 Var | 13 Var | 14 Var | 15 Var | 16 Var | 17 Var | 18 Var | 19 Var | 20 Var | 21 Var | 22 Var |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 93 | 944 | 945 | 946 | 947 | 948 | 949 | 950 | 952 | 953 | 954 | 955 |
| 94 | 952 | 952 | 953 | 954 | 955 | 956 | 957 | 958 | 959 | 960 | 961 |
| 95 | 959 | 960 | 961 | 961 | 962 | 963 | 964 | 965 | 965 | 966 | 967 |

| Height of the Seg. | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 26 | ſub | 1 | 1 | 1 | 1 | 1 | 1 | | | | |
| 27 | ſub | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | | |
| 28 | ſub | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | | |
| 29 | ſub | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | |
| 30 | ſub | 3 | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | |
| 31 | ſub | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 | |
| 32 | ſub | 4 | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | |
| 33 | ſub | 4 | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | |
| 34 | ſub | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | |
| 35 | ſub | 5 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 |
| 36 | ſub | 5 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 |
| 37 | ſub | 5 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 |
| 38 | ſub | 6 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 |
| 39 | ſub | 6 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 |
| 40 | ſub | 6 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 |
| 41 | ſub | 5 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 |
| 42 | ſub | 5 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 |
| 43 | ſub | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | |
| 44 | ſub | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | |
| 45 | ſub | 4 | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | |
| 46 | ſub | 3 | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | |
| 47 | ſub | 3 | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | |
| 48 | ſub | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | | |
| 49 | ſub | 1 | 1 | 1 | 1 | 1 | 1 | | | | |

Tab. 8. For Stand. Casks of the 8 Diam. Variety.

| Indexes of the 8 Diam Var. | | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 Var | 2 Var | 3 Var | 4 Var | 5 Var | 6 Var | 7 Var | 8 Var | 9 Var | 10 Var | 11 Var |
| 93 | | 932 | 932 | 933 | 934 | 935 | 937 | 938 | 939 | 940 | 941 | 942 |
| 94 | | 941 | 942 | 943 | 944 | 945 | 946 | 947 | 948 | 949 | 950 | 951 |
| 95 | | 951 | 951 | 952 | 953 | 953 | 954 | 955 | 956 | 957 | 957 | 958 |
| Height of the Seg. | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif |
| 51 | add | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 |
| 52 | add | 4 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 2 | 2 |
| 53 | add | 6 | 6 | 6 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 3 |
| 54 | add | 6 | 6 | 6 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 3 |
| 55 | add | 9 | 8 | 8 | 7 | 7 | 6 | 6 | 6 | 5 | 5 | 4 |
| 56 | add | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 6 | 5 | 5 |
| 57 | add | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 6 | 5 | 5 |
| 58 | add | 11 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 6 |
| 59 | add | 11 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 6 |
| 60 | add | 12 | 11 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 |
| 61 | add | 12 | 11 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 |
| 62 | add | 12 | 11 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 |
| 63 | add | 11 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 6 |
| 64 | add | 11 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 6 |
| 65 | add | 11 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 6 |
| 66 | add | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 6 | 5 | 5 |
| 67 | add | 9 | 8 | 8 | 7 | 7 | 6 | 6 | 6 | 5 | 5 | 4 |
| 68 | add | 9 | 8 | 8 | 7 | 7 | 6 | 6 | 6 | 5 | 5 | 4 |
| 69 | add | 8 | 7 | 7 | 6 | 6 | 6 | 5 | 5 | 5 | 4 | 4 |
| 70 | add | 6 | 6 | 6 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 3 |
| 71 | add | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 3 | 3 | 3 |
| 72 | add | 4 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 2 | 2 |
| 73 | add | 4 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 2 | 2 |
| 74 | add | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 |
| 75 | add | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 |

Tab. 8. For Stand. Casks of the 8 Diam. Variety.

| Indexes of the 8 Diam Var. | 12 Var | 13 Var | 14 Var | 15 Var | 16 Var | 17 Var | 18 Var | 19 Var | 20 Var | 21 Var | 22 Var |
|---|---|---|---|---|---|---|---|---|---|---|---|
|  | Indexes of the Varieties of Curvature. |  |  |  |  |  |  |  |  |  |  |
| 93 | 944 | 945 | 946 | 947 | 948 | 949 | 950 | 952 | 953 | 954 | 955 |
| 94 | 952 | 952 | 953 | 954 | 955 | 956 | 957 | 958 | 959 | 960 | 961 |
| 95 | 959 | 960 | 961 | 961 | 962 | 963 | 964 | 965 | 965 | 966 | 967 |

| Height of the Seg. |  | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 51 | add | 1 | 1 | 1 | 1 | 1 | 1 |  |  |  |  |
| 52 | add | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 |  |  |
| 53 | add | 3 | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 1 |  |
| 54 | add | 3 | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 1 |  |
| 55 | add | 4 | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 1 |  |
| 56 | add | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 |  |
| 57 | add | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 |  |
| 58 | add | 5 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 |
| 59 | add | 5 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 |
| 60 | add | 6 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 |
| 61 | add | 6 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 |
| 62 | add | 6 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 |
| 63 | add | 5 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 |
| 64 | add | 5 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 |
| 65 | add | 5 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 |
| 66 | add | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 |  |
| 67 | add | 4 | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 1 |  |
| 68 | add | 4 | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 1 |  |
| 69 | add | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 |  |
| 70 | add | 3 | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 1 |  |
| 71 | add | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 |  |
| 72 | add | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 |  |  |
| 73 | add | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 |  |  |
| 74 | add | 1 | 1 | 1 | 1 | 1 | 1 |  |  |  |  |
| 75 | add | 1 | 1 | 1 | 1 | 1 | 1 |  |  |  |  |

Tab. 8. For Stand. Casks of the 8 Diam. Variety.

| Indexes of the 8 Diam Var. | | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 Var | 2 Var | 3 Var | 4 Var | 5 Var | 6 Var | 7 Var | 8 Var | 9 Var | 10 Var | 11 Var |
| 93 | | 932 | 932 | 933 | 934 | 935 | 937 | 938 | 939 | 940 | 941 | 942 |
| 94 | | 941 | 942 | 943 | 944 | 945 | 946 | 947 | 948 | 949 | 950 | 951 |
| 95 | | 951 | 951 | 952 | 953 | 953 | 954 | 955 | 956 | 957 | 957 | 958 |
| Height of the Seg. | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif |
| 76 | add | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 77 | | | | | | | | | | | | |
| 78 | ſub | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 |
| 79 | ſub | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 |
| 80 | ſub | 4 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 2 | 2 |
| 81 | ſub | 4 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 2 | 2 |
| 82 | ſub | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 3 | 3 | 3 |
| 83 | ſub | 6 | 6 | 6 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 3 |
| 84 | ſub | 8 | 7 | 7 | 6 | 6 | 6 | 5 | 5 | 5 | 4 | 4 |
| 85 | ſub | 8 | 7 | 7 | 6 | 6 | 6 | 5 | 5 | 5 | 4 | 4 |
| 86 | ſub | 8 | 7 | 7 | 6 | 6 | 6 | 5 | 5 | 5 | 4 | 4 |
| 87 | ſub | 8 | 7 | 7 | 6 | 6 | 6 | 5 | 5 | 5 | 4 | 4 |
| 88 | ſub | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 6 | 5 | 5 |
| 89 | ſub | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 6 | 5 | 5 |
| 90 | ſub | 10 | 9 | 9 | 8 | 8 | 7 | 7 | 6 | 6 | 5 | 5 |
| 91 | ſub | 9 | 8 | 8 | 7 | 7 | 6 | 6 | 6 | 5 | 5 | 4 |
| 92 | ſub | 9 | 8 | 8 | 7 | 7 | 6 | 6 | 6 | 5 | 5 | 4 |
| 93 | ſub | 9 | 8 | 8 | 7 | 7 | 6 | 6 | 6 | 5 | 5 | 4 |
| 94 | ſub | 8 | 7 | 7 | 6 | 6 | 6 | 5 | 5 | 5 | 4 | 4 |
| 95 | ſub | 8 | 7 | 7 | 6 | 6 | 6 | 5 | 5 | 5 | 4 | 4 |
| 96 | ſub | 6 | 6 | 6 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 3 |
| 97 | ſub | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 3 | 3 | 3 |
| 98 | ſub | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 |
| 99 | ſub | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 |

### Tab. 8. For Stand. Casks of the 8 Diam. Variety.

| Indexes of the 8 Diam Var. | | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 12 Var | 13 Var | 14 Var | 15 Var | 16 Var | 17 Var | 18 Var | 19 Var | 20 Var | 21 Var | 22 Var |
| 93 | | 944 | 945 | 946 | 947 | 948 | 949 | 950 | 952 | 953 | 954 | 955 |
| 94 | | 952 | 952 | 953 | 954 | 955 | 956 | 957 | 958 | 959 | 960 | 961 |
| 95 | | 959 | 960 | 961 | 961 | 962 | 963 | 964 | 965 | 965 | 966 | 967 |
| Height of the Seg- | | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | Dif | | |
| 76 | add | 1 | | | | | | | | | | |
| 77 | | | | | | | | | | | | |
| 78 | ſub | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 79 | ſub | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 80 | ſub | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | | | |
| 81 | ſub | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | | | |
| 82 | ſub | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | | |
| 83 | ſub | 3 | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | | |
| 84 | ſub | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 | | |
| 85 | ſub | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 | | |
| 86 | ſub | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 | | |
| 87 | ſub | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 | | |
| 88 | ſub | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | | |
| 89 | ſub | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | | |
| 90 | ſub | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | | |
| 91 | ſub | 4 | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | | |
| 92 | ſub | 4 | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | | |
| 93 | ſub | 4 | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | | |
| 94 | ſub | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 | | |
| 95 | ſub | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 | | |
| 96 | ſub | 3 | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | | |
| 97 | ſub | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | | |
| 98 | ſub | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 99 | ſub | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |

## EXAMPLE I.

There is a Cask whoſe Length is 50 Inches, Content 182 Gallons, and the wet 18 Inches. The Bung Diameter is 36 Inches, and the Head Diameter 28. Required the Quantity of Liquor in the Cask.

Firſt, The Head Diam. being divided by the Bung Diam. gives .78, which, by comparing it with the Numbers at the Top of the Table of Segments for Spheroids ſtanding, will be found to be an Index of the fourth diametrical Variety; and the wet Inches being divided by the Length, quotes .360 for the tabular Height of the Segment, againſt which, in the Column for the 4th Var. is the Seg. 3406.

Secondly, The Content being divided by the circumſcribing Cylinder, quotes .826, and this being compared with the Numbers (or Indexes of the Varieties of Curvature) ſtanding againſt (78) the Index of the diam. Var. at the Top of the fourth Table of Differences, the neareſt to it in that Line (*viz.* 827) is found in the Column for the 9th Var. therefore the Cask is of the 9th Variety of Curvature; and the Difference againſt (36) the tabular Height of the Segment in the Col. for the 9th Var. is .35, which being ſo many ten thouſandth Parts of the whole Content, is to be underſtood thus .0035; and, as the Table directs, is to be ſubſtracted from the ſpheroidical Segment.

| | |
|---|---|
| Therefore from . . . . | .3406 |
| Taking . . . . . | .0035 |
| There will remain the true Segment . | .3371 |
| Content . . . . . | 182 |
| | 6742 |
| | 26968 |
| | 3371 |
| Quantity of Liquor in the Cask . | 61.3522 |

Note, The circumſcribing Cylinder is found by multiplying the Area of the Bung Circle by the Length.

## EXAMPLE II.

There is a Caſk whoſe Length is 51, Content 189, and wet Inches 21.4. The Bung Diam. being 35, and Head Diam. 30.1. Required the Quantity of Liquor in the Caſk.

Proceeding here as in the laſt Example, we ſhall find the Caſk to be of the 6th diametrical Var. and of the 11th Var. of Curvature. And the wet Inches being divided by the Length, will give 420 for the tabular Height of the Segment in the ſegmental Table, and 42 for the tabular Height of the Segment in the differential Table.

Therefore the ſpheroidical Segment of the 6th Var. againſt 420, is *per* Table for ſtanding Caſks } .4126

And the Exceſs, or Difference to be ſubſtracted, againſt 42, in the Col. for the 11th Var. *per* diff. Table 6, is . . . } 15

True Segment . . . .4111
Content . . . 189

36999
32888
4111

Quantity of Liquor in the Caſk . 77.6979

## EXAMPLE III.

Let there be a Caſk in the Form of the middle Fruſtum of two parabolic Conoids, whoſe Length is 70.2, Content 225.24, and the wet Inches 54.3. The Bung Diam. being 38.4, and the Head Diam. 28.8. Required the Quantity of Liquor in the Caſk.

3d diam. Var.
2d Var. of Curvature.

Wet divided by the Length gives .772.

Spheroidical

| | |
|---|---|
| Spheroidical Seg. of the 3d Var. againſt 772, is | .8047 |
| Defect, or Difference to be added, of the 2d Var. Tab. 3. againſt 77, is | 23 |
| True Segment | .8070 |
| Content | 225,24 |
| Segment | .807 |
| | 157668 |
| | 1801920 |
| Quant. of Liquor in the Cask | 181.76868 |

## EXAMPLE IV.

Let there be a Caſk in the Form of the middle Fruſtum of two Cones, whoſe Length is 40, Content 80.6, and wet 10. The Bung Diam. 32, Head Diam. 21.4. Required the Quantity of Liquor in the Caſk.

1ſt diam. Var.
1ſt Var. of Curvature.

Wet divided by the Length .250

| | |
|---|---|
| Againſt 250, in the 1ſt Column of ſpher. Segments ſtanding, is | .2077 |
| Againſt 25, in the 1ſt Column of Differences, Table 1. is | 66 |
| True Segment | .2011 |
| Content | 80.6 |
| | 12066 |
| | 160880 |
| Quantity of Liquor in the Caſk | 16.20806 |

The Ullage of a Caſk, which is the Fruſtum of a Cone ſtanding upon its leſſer Baſe, is found after the ſame Manner, obſerving to divide the wet Inches by twice the Length, and to multiply the reſulting Segment by twice the Content.

EX-

## EXAMPLE V.

There is a Caſk in the Form of the middle Fruſtum of two parabolic Conoids, whoſe Length is 70 Inches, and Content 272 Wine Gallons, the Bung Diam. being 38 Inches, and Head Diam. 29. Ir is required to find the Contents at every Inch of the Length.

The Head Diam. divided by the Bung Diam. quotes .76. Therefore take the Segments of the 3d Var. from the Table for Spheroids ſtanding, and correct them by the Differences of the 2d Var. in the 3d differential Table.

### OPERATIONS.

70)1.000(.014

Segment againſt 14 is . . .0094
Difference (to be added) againſt 1, is . 5

True Seg. . . . .0099
Content of the Caſk . . 272

198
693
198

Content at 1 Inch deep . . 2.6928

70)2.000(.029

Segment againſt 29 is . . .0199
Difference againſt 3 (to be added) is . 15

True Seg. . . . .0214
272

428
1498
428

Content at 2 Inches . . . 5.8208

And by proceeding in the ſame Manner at every Inch, the following Table will be obtained.

| Wet in | | Spheroid Segment. 3d Var. | Diff. 2 Var. 3 Tab. | True Seg. for the Cask. | Quant. in the Cask. | Dry Inches |
|---|---|---|---|---|---|---|
| Inch. | 1000 Pts of the Length. | | | | | |
| 1 | 14 | .0094 | 5 | .0099 | 2.7 | 69 |
| 2 | 29 | .0199 | 15 | .0214 | 5.8 | 68 |
| 3 | 43 | .0302 | 17 | .0319 | 8.7 | 67 |
| 4 | 57 | .0408 | 20 | .0428 | 11.6 | 66 |
| 5 | 71 | .0517 | 22 | .0539 | 14.7 | 65 |
| 6 | 86 | .0638 | 21 | .0659 | 17.9 | 64 |
| 7 | 100 | .0754 | 21 | .0775 | 21.1 | 63 |
| 8 | 114 | .0874 | 19 | .0893 | 24.3 | 62 |
| 9 | 129 | .1005 | 15 | .1020 | 27.7 | 61 |
| 10 | 143 | .1131 | 12 | .1143 | 31.1 | 60 |
| 11 | 157 | .1260 | 6 | .1266 | 34.4 | 59 |
| 12 | 171 | .1391 | 2 | .1393 | 37.9 | 58 |
| 13 | 186 | .1535 | 6 | .1529 | 41.6 | 57 |
| 14 | 200 | .1672 | 10 | .1662 | 45.2 | 56 |
| 15 | 214 | .1811 | 14 | .1797 | 48.9 | 55 |
| 16 | 228 | .1953 | 23 | .1930 | 52.5 | 54 |
| 17 | 243 | .2107 | 27 | .2080 | 56.6 | 53 |
| 18 | 257 | .2253 | 35 | .2218 | 60.3 | 52 |
| 19 | 271 | .2402 | 40 | .2362 | 64.2 | 51 |
| 20 | 286 | .2562 | 48 | .2514 | 68.4 | 50 |
| 21 | 300 | .2713 | 51 | .2662 | 72.4 | 49 |
| 22 | 314 | .2866 | 53 | .2813 | 76.5 | 48 |
| 23 | 328 | .3021 | 59 | .2962 | 80.6 | 47 |
| 24 | 343 | .3188 | 60 | .3128 | 85.1 | 46 |
| 25 | 357 | .3346 | 63 | .3283 | 89.3 | 45 |
| 26 | 371 | .3504 | 64 | .3440 | 93.6 | 44 |
| 27 | 386 | .3675 | 62 | .3613 | 98.3 | 43 |
| 28 | 400 | .3836 | 61 | .3775 | 102.7 | 42 |
| 29 | 414 | .3997 | 58 | .3939 | 107.1 | 41 |
| 30 | 428 | .4160 | 52 | .4108 | 111.7 | 40 |
| 31 | 443 | .4334 | 47 | .4287 | 116.6 | 39 |
| 32 | 457 | .4497 | 35 | .4462 | 121.4 | 38 |
| 33 | 471 | .4661 | 28 | .4633 | 126. | 37 |
| 34 | 486 | .4836 | 7 | .4829 | 131.3 | 36 |
| 35 | 500 | .5000 | | .5000 | 136. | 35 |

| Wet Inches. | Quant. in the Cask. | Dry Inches. |
|---|---|---|
| 36 | 140.7 | 34 |
| 37 | 146. | 33 |
| 38 | 150.6 | 32 |
| 39 | 155·4 | 31 |
| 40 | 160·3 | 30 |
| 41 | 164·9 | 29 |
| 42 | 169·3 | 28 |
| 43 | 173·7 | 27 |
| 44 | 178·4 | 26 |
| 45 | 182·7 | 25 |
| 46 | 186.9 | 24 |
| 47 | 191·4 | 23 |
| 48 | 195·5 | 22 |
| 49 | 199.6 | 21 |
| 50 | 203.6 | 20 |
| 51 | 207.8 | 19 |
| 52 | 211.7 | 18 |
| 53 | 215·4 | 17 |
| 54 | 219.5 | 16 |
| 55 | 223·1 | 15 |
| 56 | 226.8 | 14 |
| 57 | 230·4 | 13 |
| 58 | 234·1 | 12 |
| 59 | 237.6 | 11 |
| 60 | 240.9 | 10 |
| 61 | 244·3 | 9 |
| 62 | 247·7 | 8 |
| 63 | 250.9 | 7 |
| 64 | 254·1 | 6 |
| 65 | 257·3 | 5 |
| 66 | 260.4 | 4 |
| 67 | 263·3 | 3 |
| 68 | 266.2 | 2 |
| 69 | 269·3 | 1 |
| 70 | 272. | 0 |

Note, The ſpheroidical Segments for the firſt 12 Inches being erroneous in point of Defect, as is evident by the differential Table, the Differences for thoſe Inches are added thereto; and being erroneous in point of Exceſs for the other Inches, the Differences afterwards are ſubſtracted.

Note alſo, That 1 Inch in Depth being equal to 14 thouſandth Parts of the Length nearly, (and the Tables of Differences being calculated only to every hundredth Part of the Length) I take the Segment which ſtands againſt 14, and the Difference which ſtands againſt 1, in the reſpective Tables for the 1ſt Inch. Two Inches in Depth being equal to 29 thouſandth or 3 hundredth Parts of the Length nearly, for two Inches I take the Segment ſtanding againſt 29, and the Difference ſtanding againſt 3. For 3 Inches I take the Segment ſtanding againſt 43, and the Difference ſtanding againſt 4. For 4 Inches I take the Segment ſtanding againſt 57, and the Difference ſtanding againſt 6; 57 thouſandth Parts being nearly equal to 6 hundredth Parts: And ſo on.

If the Heads ſhould be unequal, and it is a ſtanding Cask, divide the wet Inches by twice the Diſtance of the leſſer Head from the Bung, and the Quotient will be the tabular Height of the Segment; and the leſſer Head Diam. being divided by the Bung Diam. the Quotient will be the Index of the diam. Var. which being ſought at the Top of the Table of Segments for ſtanding Casks, the Place or Col. in which it is found, will ſhew the Var. of the Segment, which being taken oppoſite to the tabular Height, and multiplied by twice that Part of the Content contained between the leſſer Head and Bung, will give the Content of the Ullage. But the Cask not being ſpheroidical, and it ſhould be thought neceſſary to correct the Segment, if you divide that Part of the Content contained between the leſſer Head and Bung by its circumſcribing Cylinder, the Quotient will be the Index of the Variety of Curvature, which being ſought at the Top of the reſpective Table of Differences, in the ſame Line

Line or Row with the Index of the diam. Var. the Place or Col. in which it (or the neareſt Number to it) is found, will ſhew the Var. of the Difference.

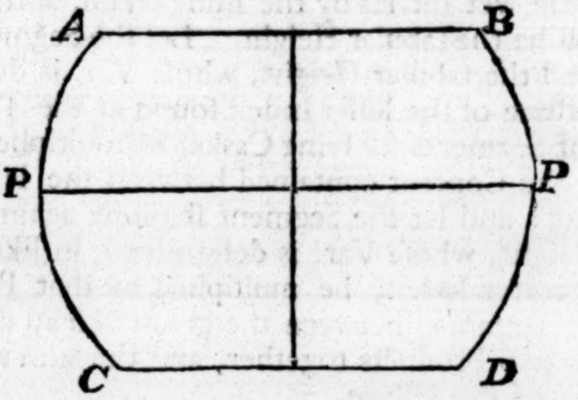
If the Heads ſhould be unequal, and it is a lying Cask, divide the leſſer Head Diam. by the Bung Diam. and the Quotient will be the Index of the diam. Var. of the Part contained between the leſſer Head and Bung; and the greater Head Diam. being divided by the Bung Diam. the Quotient will be the Index of the diam. Var. of the Part contained between the greater Head and Bung. Divide the wet Inches by the Bung Diam. and the Quotient will be the tabular Height. Let the Segment ſtanding againſt the tabular Height, whoſe Var. is determined by the Place of the leſſer Index found at the Top of the Table of Segments for lying Casks, be multiplied by that Part of the Content contained between the leſſer Head and Bung; and let the Segment ſtanding againſt the tabular Height, whoſe Var. is determined, in like manner, by the greater Index, be multiplied by that Part of the Content contained between the greater Head and Bung. Add the two Products together, and the Sum will be the Content of the Ullage.

I have ſuppoſed the Bung to be at the broadeſt, or moſt bulging Part of the Cask; if it ſhould happen otherwiſe, the Diameter at the broadeſt Part muſt be found and uſed inſtead of the Bung Diam. and if it is a lying Cask, half the Difference between the ſaid Diameters muſt be added to the wet Inches.

And now having explained and illuſtrated the Uſe of the foregoing Tables of Segments and Differences, by a ſufficient Number of Examples in Ullaging and Inching all Sorts of cloſe Casks, I ſhall proceed to illuſtrate the ſame, in Inching all Kind of open Utenſils, by conceiving them to be Segments or Parts of Casks.

## EXAMPLE I.

Let it be required to inch the Tun A B C D, whoſe greateſt Bulge is at P P, the Diſtance of the greateſt Bulge from the Top 15 Inches, and its Diſtance from the Bottom 21 Inches. The Diameter at Top 83, at P P 89, and at the Bottom 80. The Content of the Part A B P P 323 Ale Gallons, and the Content of the Part C D P P 438.



This Tun being conſidered as the Segment or Part of a Cask whoſe Bung Diam. is (89) P P, Head Diam. (80) C D, Length twice 21 or 42, and Content twice 438 or 876; and a Table of the Contents being made for ſuch a Cask to 36 Inches, we ſhall have a Table exhibiting the Contents at every Inch for the propoſed Tun.

Thus, the Diam. C D divided by the Diam. P P, quotes .90, which is an Index of the 7th diam. Var. therefore I take the ſpheroidical Segments of the 7th Variety. And twice the Content of C D P P, *viz.* 876, being divided by the Cylinder whoſe Diam. is P P, and Altitude 42, *viz.* by 926.55, quotes .945; and comparing this with the Indexes of the Variety of Curvature ſtanding againſt (90) the Index of the diam. Var. at the Top of the 7th Table of Differences, I find that in the Column for the 22d Variety to be no more than 937, which

which ſhews, that the Tun is more curved than the Spheroid; but the Index of the 17th Var. of Curvature, *viz.* 929, being as much leſs than 937 as 945 exceeds it, I take the Differences of the 17th Var. and when the Table directs the Differences to be added to the ſpheroidical Segments, I ſubſtract them, and when it directs them to be ſubſtracted I add them.

## OPERATIONS.

42)1.00(.024 nearly.

| | |
|---|---|
| Segment of the 7th Var. againſt 24, in the Table for Spheroids ſtanding, is . . | .0210 |
| Difference of the 17th Variety, Table 7. againſt 2, is . . . . . . . . | .0001 |
| | .0209 |
| | 876 |
| | 1254 |
| | 1463 |
| | 1672 |
| Content at 1 Inch deep . . . | 18.3084 |

42)2.000(.048 nearly.

| | |
|---|---|
| Segment againſt 48 is . . . | .0424 |
| Difference againſt 5 is . . . . . | 3 |
| | .0421 |
| | 876 |
| | 2526 |
| | 2947 |
| | 3368 |
| Content at 2 Inches . . . | 36.8796 |

42)3.000(.071

| | |
|---|---|
| Segment againſt 71 is . . . | .0633 |
| Difference againſt 7 is . . . . . | 3 |
| | .0630 |
| | 876 |
| | 3780 |
| | 4410 |
| | 5040 |
| Content at 3 Inches . . . . | 55.1880 |

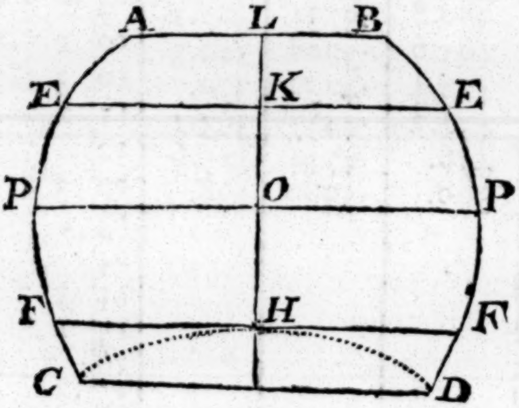
In like Manner all the reſt of the Contents may be found; but as I obſerve the Differences are very ſmall, and the Omiſſion of them can never produce an Error of Half a Gallon, I have diſregarded them in making the following Table of the Tun.

| Wet in Inches. | Wet in 1000th Parts of 42. | Segments. 7 Var. | Content in Gallons. | Content in |  |  | Dry Inches. |
|---|---|---|---|---|---|---|---|
|  |  |  |  | B | F | G |  |
| 1 | 23.8 | .0210 | 18.4 |  | 2 | 1.4 | 35 |
| 2 | 47.6 | .0424 | 37.1 | 1 |  | 3.1 | 34 |
| 3 | 71.4 | .0633 | 55.4 | 1 | 2 | 4.4 | 33 |
| 4 | 95.2 | .0856 | 75. | 2 |  | 7. | 32 |
| 5 | 119. | .1082 | 94.8 | 2 | 3 | 1.3 | 31 |
| 6 | 142.8 | .1312 | 114.9 | 3 | 1 | 4.4 | 30 |
| 7 | 166.6 | .1545 | 135.3 | 3 | 3 | 7.8 | 29 |
| 8 | 190.4 | .1771 | 155.1 | 4 | 2 | 2.1 | 28 |
| 9 | 214.2 | .2010 | 176.1 | 5 |  | 6.1 | 27 |
| 10 | 238. | .2252 | 197.3 | 5 | 3 | 1.8 | 26 |
| 11 | 261.8 | .2496 | 218.6 | 6 | 1 | 6.1 | 25 |
| 12 | 285.6 | .2742 | 240.2 | 7 |  | 2.2 | 24 |
| 13 | 309.4 | .2980 | 261. | 7 | 2 | 6. | 23 |
| 14 | 333.2 | .3230 | 282.9 | 8 | 1 | 2.4 | 22 |
| 15 | 357. | .3481 | 304.9 | 8 | 3 | 7.4 | 21 |
| 16 | 380.8 | .3734 | 327.1 | 9 | 2 | 4.1 | 20 |
| 17 | 404.6 | .3988 | 349.3 | 10 | 1 | 0.8 | 19 |
| 18 | 428.4 | .4232 | 370.7 | 10 | 3 | 5.7 | 18 |
| 19 | 452.2 | .4487 | 393.1 | 11 | 2 | 2.1 | 17 |
| 20 | 476. | .4744 | 415.6 | 12 |  | 7.6 | 16 |
| 21 | 500. | .5000 | 438. | 12 | 3 | 4.5 | 15 |
| 22 |  |  |  | 13 | 2 | 1.4 | 14 |
| 23 |  |  |  | 14 |  | 6.9 | 13 |
| 24 |  |  |  | 14 | 3 | 3.3 | 12 |
| 25 |  |  |  | 15 | 1 | 8.2 | 11 |
| 26 |  |  |  | 16 |  | 4.9 | 10 |
| 27 |  |  |  | 16 | 3 | 1.6 | 9 |
| 28 |  |  |  | 17 | 1 | 6.6 | 8 |
| 29 |  |  |  | 18 |  | 3. | 7 |
| 30 |  |  |  | 18 | 2 | 6.8 | 6 |
| 31 |  |  |  | 19 | 1 | 2.9 | 5 |
| 32 |  |  |  | 19 | 3 | 7.2 | 4 |
| 33 |  |  |  | 20 | 2 | 2.9 | 3 |
| 34 |  |  |  | 21 |  | 6.9 | 2 |
| 35 |  |  |  | 21 | 3 | 1.2 | 1 |
| 36 |  |  |  | 22 | 1 | 4.6 | 0 |

The Difference of the Contents at 20 and 21 Inches, being added to the Content at 21 Inches, gives the Content at 22 Inches; and the Difference of the Contents at 19 and 21 Inches, being added to the Content at 21 Inches, gives the Content at 23 Inches, and ſo on to the End. Or, if you ſubſtract the Content at 20 Inches from twice the Content at 21 Inches, the Remainder will be the Content at 22 Inches; and if you ſubſtract the Content at 19 Inches from twice the Content at 21 Inches, the Remainder will be the Content at 23 Inches; alſo if you ſubſtract the Content at 18 Inches from twice the Content at 21 Inches, the Remainder will be the Content at 24 Inches; and ſo on.

## EXAMPLE II.

Let A B C D repreſent a Still, whoſe Dimenſions are as under, and let it be required to inch the ſame.



| | | |
|---|---|---|
| The Diameter | A B | is 21 Inches. |
| | E E | 45,5 |
| | P P, | where it bulges moſt, 47,6 |
| | F F | 44. |
| Altitude | L K | 7,3 |
| | K H | 35.5 |
| | H O | 20.5 |

Content of the Top ABEE 31.6 Wine Gallons.
Middle EEFF 265.
To cover the Crown 7.5

For the middle Part.

FF divided by PP gives .92.

And the Content of the Part PPFF, which is 151 Gallons, being divided by the Content of its circumſcribing Cylinder, whoſe Baſe is PP, and Altitude OH, that is, by 158, gives .955. The firſt of theſe Quotients ſhews, that the Segments are to be taken out of the 7th Col. and the laſt (being nearly equal to the Index of the Variety of Curvature for the Spheroid, which is 949) that they need no Correction. Which being premiſed, I divide Unity by (41) twice OH, and ſet down the Quot. againſt 1. The double of this Quot. I ſet down againſt 2, and ſo on, as in the laſt Example; and multiply the correſponding ſpheroidical Segments into (302) twice PPFF. And to the Contents thus found I add continually (7.5) the Quantity required to cover the Crown.

Having compleated the middle Part EEFF, I next proceed to inch the Top, or what is generally called the globular Part ABEE, which, on the Suppoſition of its being the Half of a Cask, whoſe Head Diam. is AB, Bung Diam. EE, Length twice KL, and Content twice that of ABEE, is done in the following Manner.

The Diam. AB divided by the Diam. EE gives .46, which being leſs than (67) the leaſt Index of diam. Var. in the Tables; and 88, which exceeds 67 as much as 67 exceeds 46, being an Index of the 6th diam. Var. that I may obtain the true Segments nearly, to the Segments of the 1ſt Var. corrected by the 1ſt differential Table, I add the Differences between them and the Segments of the 6th Var. corrected by the 6th differential Table. And the Content of ABEE being divided by its circumſcribing Cylinder, the Quotient will be .615 nearly; which ſhews, that the Top Part is nearly conoidical, the Index of the Var. of Curvature for the

Conoid being (in this Caſe) 606 ; whence the Segments above mentioned are to be corrected by the Differences of the 2d Var. in the Tables above-mentioned. This being premiſed, for the Content at 1 Inch from the greater Baſe, I divide Unity by (14.6) twice KL, and to the Quotient add .500, alſo from the correſponding Segment (found as above) I deduct .5000 ; the Remainder being multiplied by twice the Content of ABEE will give the Content at 1 Inch. For the Content at 2 Inches I divide 2 by 14.6, and proceed as before. And ſo on.

## OPERATIONS.

| | | | |
|---|---|---|---|
| | 14.6)1.000(.068 | | |
| | add .500 | | |
| | .568 | | |
| Againſt 568 in 1ſt Col. of Seg. is | .5831 | In 6th Col. | .5744 |
| Againſt 57 in the 2d Col. of 1ſt Tab. of Differences is | 75 | In Tab. 6 | 25 |
| Corrected Seg. of the 1ſt Var. | .5906 | | .5769 |
| Cor. Seg. of the 6th Var. ſubſt. | .5769 | | |
| Difference — — | .0137 | | |
| Cor. Seg. of the 1ſt Var. add | .5906 | | |
| Sum — — | .6043 | | |
| Deduct. — — | .5000 | | |
| True Seg. nearly for one Inch | .1043 | | |
| Twice the Content of ABEE mult. by —— | 63.2 | | |
| Content at 1 Inch deep | 6.59176 | | |

14.6)2(.137
.500

.637

| | | | |
|---|---|---|---|
| Againſt 637 in 1ſt Col. of Seg. is | .6655 | In 6thCol. | 6491 |
| Diff. *per* 1ſt Tab. | 96 | *P.* Tab. 6. | 28 |
| Cor. Seg. of the 1ſt Var. | .6751 | | .6519 |
| Cor. Seg. of the 6th Var. ſubſt. | .6519 | | |
| Difference | .0232 | | |
| Cor. Seg. of the 1ſt Var. add | .6751 | | |
| Sum | .6983 | | |
| Deduct | .5000 | | |
| True Seg. at 2 Inches | .1983 | | |
| Multiply by | 63.2 | | |
| Content at 2 Inches | 12.53256 | | |

14.6)3(.205
.500

.705

| | | |
|---|---|---|
| | .7434 | .7212 |
| | 77 | 19 |
| | .7511 | .7231 |
| | .7231 | |
| | .0280 | |
| | .7511 | |
| | .7791 | |
| | .5000 | |
| | .2791 | |
| | 63.2 | |
| Content at 3 Inches | 17.63912 | |

14.6)4(.274
.500

.774

.8171 .7921
45 5

.8216 .7926
.7926

.0290
.8216

.8506
1.5000

.3506
63.2

Content at 4 Inches 22.15792

14.6)5.(.342
.500

.842

.8830 .8593
5 11

.8835 .8582
.8582

.0243
.8835

.9078
.5

.4078
63.2

Content at 5 Inches 25.77296

14.6)6(.411
.500

.911

.9409 .9236
18 17

.9391 .9219
.9219

.0072
.9391

.9463
.5

.4463
63.2

Content at 6 Inches 28.20616

14.6)7.(.479
.500

.979

.9879 .9828
11 7

.9868 .9821
.9821

.0047
.9868

.9915
.5

.4915
63.2

Content at 7 Inches 31.06280

By

By the Table of Indexes further on, it will appear, that the Top Part of the Still comes neareſt to the 3d Variety of Curvature; and therefore, if the Differences of the 3d Var. had been taken, the Contents would have been found ſomething nearer the Truth.

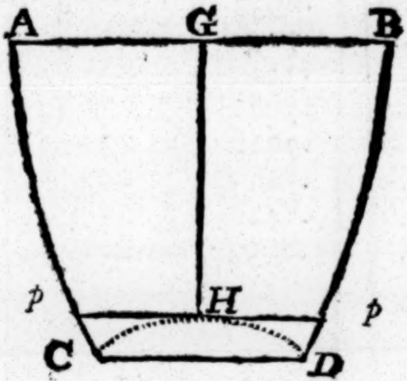
## A TABLE for the whole STILL.

| Wet expreſſed in | | Segments. 7 Var. | Content of the middle Part EEFF. | Quantity in the Still. |
|---|---|---|---|---|
| Inches. | 1000th Parts of 42. | | | |
| 1 | 24.4 | .0210 | 6.3 | 13.8 |
| 2 | 48.8 | .0433 | 13.1 | 20.6 |
| 3 | 73.2 | .0652 | 19.7 | 27.2 |
| 4 | 97.6 | .0884 | 26.7 | 34.2 |
| 5 | 122.0 | .1110 | 33.5 | 41.0 |
| 6 | 146.4 | .1341 | 40.5 | 48. |
| 7 | 170.8 | .1584 | 47.8 | 55.3 |
| 8 | 195.2 | .1820 | 55. | 62.5 |
| 9 | 219.6 | .2070 | 62.5 | 70. |
| 10 | 244. | .2312 | 69.8 | 77.3 |
| 11 | 268.4 | .2557 | 77.2 | 84.7 |
| 12 | 292.8 | .2814 | 85. | 92.5 |
| 13 | 317.2 | .3063 | 92.5 | 100. |
| 14 | 341.6 | .3324 | 100.4 | 107.9 |
| 15 | 366. | .3576 | 108. | 115.5 |
| 16 | 390.4 | .3829 | 115.6 | 123.1 |
| 17 | 414.8 | .4094 | 123.6 | 131.1 |
| 18 | 439.2 | .4349 | 131.3 | 138.8 |
| 19 | 463.6 | .4616 | 139.4 | 146.9 |
| 20 | 488. | .4872 | 147.1 | 154.6 |
| 21 | 512.4 | .5128 | 154.9 | 162.4 |
| 22 | 536.8 | .5395 | 162.9 | 170. |
| 23 | 561.2 | .5651 | 170.7 | 178.2 |
| 24 | 585.6 | .5917 | 178.7 | 186.2 |
| 25 | 610. | .6171 | 186.4 | 193.9 |

| Wet expreſſed in | | Seg-ments. 7 Var. | Content of the middle Part EEFF. | Quan-tity in the Still. |
|---|---|---|---|---|
| Inches. | 1000th Parts of 42. | | | |
| 26 | 634.4 | .6424 | 194. | 201.5 |
| 27 | 658.8 | .6687 | 201.9 | 209.4 |
| 28 | 683.2 | .6937 | 209.5 | 217. |
| 29 | 707.6 | .7196 | 217.3 | 224.8 |
| 30 | 732. | .7443 | 224.8 | 232.3 |
| 31 | 756.4 | .7688 | 232.2 | 239.7 |
| 32 | 780.8 | .7940 | 239.8 | 247.3 |
| 33 | 805.2 | .8180 | 247. | 254.5 |
| 34 | 829.6 | .8426 | 254.5 | 262. |
| 35 | 854. | .8659 | 261.5 | 269. |
| 36 | | | | 275.8 |
| 37 | | | | 282. |
| 38 | | | | 287.5 |
| 39 | | | | 292.3 |
| 40 | | | | 296.4 |
| 41 | | | | 299.4 |
| 42 | | | | 302. |
| 42.8 | | | | 304.1 |

## EXAMPLE III.

Let ABCD repreſent a Copper, broadeſt at the Top, whoſe Depth, from the Top to the Vertex of the Crown is 36 Inches, the Diameter at G 115.7, the Diameter at H 110.5, the Content of AB *pp* 1289 Gallons, and the Liquor required to cover the Crown 28.



The Diameter of the leſſer Baſe divided by the Diameter of the greater Baſe, that is, 110.5 divided by 115.7 is .95. (8th Variety Diam.)

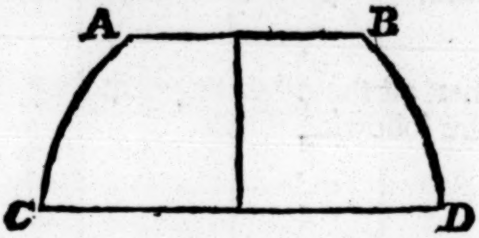
And the Content of the Part AB*pp* being divided by its circumſcribing Cylinder, gives .960. (13th Var. of Curvature.)

The former of theſe Quotients ſhews, that the Segments are to be taken out of the 8th Col. of Segments; and the latter, that the Segments are to be corrected by the 13th Column of Differences; but theſe being ſmall in the 8th Table, may be omitted. Wherefore, if the ſeveral Depths or wet Inches are divided by (72) twice the Depth from the Top to the Vertex of the Crown, and the correſponding ſpher. Segments are multiplied into (2578) twice the Content of AB *pp*; and to the reſulting Contents the Quantity required to cover the Crown, *viz.* 28, be continually added, we ſhall have the following Table.

| Wet Inches. | 1000th Parts of 72. | Segments. 8 Var. | Contents in Gallons. | Contents in B | F | G |
|---|---|---|---|---|---|---|
| 1 | 14 | .0129 | 33.2 | | 3 | 7.7 |
| 2 | 28 | .0259 | 66.8 | 1 | 3 | 7.3 |
| 3 | 42 | .039 | 100.5 | 2 | 3 | 7. |
| 4 | 56 | .0522 | 134.6 | 3 | 3 | 7.1 |
| 5 | 69 | .0645 | 166.3 | 4 | 3 | 4.8 |
| 6 | 83 | .0779 | 200.8 | 5 | 3 | 5.3 |
| 7 | 97 | .0913 | 235.4 | 6 | 3 | 5.9 |
| 8 | 111 | .1048 | 270.2 | 7 | 3 | 6.7 |
| 9 | 125 | .1184 | 305.2 | 8 | 3 | 7.7 |
| 10 | 139 | .132 | 340.3 | 10 | | 0.3 |
| 11 | 153 | .1457 | 375.6 | 11 | | 1.6 |
| 12 | 167 | .1595 | 411.2 | 12 | | 3.2 |
| 13 | 180 | .1724 | 444.4 | 13 | | 2.2 |
| 14 | 194 | .1863 | 480.3 | 14 | | 4.3 |
| 15 | 208 | .2002 | 516.1 | 15 | | 6.1 |
| 16 | 222 | .2142 | 552.2 | 16 | | 8.2 |
| 17 | 236 | .2283 | 588.6 | 17 | 1 | 2.1 |
| 18 | 250 | .2424 | 624.9 | 18 | 1 | 2.3 |
| 19 | 264 | .2566 | 661.5 | 19 | 1 | 2.6 |
| 20 | 278 | .2708 | 698.1 | 20 | 1 | 2.6 |
| 21 | 291 | .284 | 732.2 | 21 | 1 | 0.1 |
| 22 | 305 | .2983 | 769. | 22 | 1 | 2.8 |
| 23 | 319 | .3127 | 806.1 | 23 | 1 | 3.1 |
| 24 | 333 | .327 | 843. | 24 | 1 | 2.9 |
| 25 | 347 | .3414 | 880.1 | 25 | 1 | 3.1 |
| 26 | 361 | .3558 | 917.3 | 26 | 1 | 3.2 |
| 27 | 375 | .3702 | 954.4 | 27 | 1 | 3.1 |
| 28 | 389 | .3848 | 992. | 28 | 1 | 3.6 |
| 29 | 403 | .3992 | 1029.1 | 29 | 1 | 3.1 |
| 30 | 416 | .4127 | 1063.9 | 30 | 1 | 0.8 |
| 31 | 430 | .4272 | 1101.3 | 31 | 1 | 3.4 |
| 32 | 444 | .4418 | 1139. | 32 | 1 | 3.7 |
| 33 | 458 | .4563 | 1176.3 | 33 | 1 | 3.3 |
| 34 | 472 | .4709 | 1214. | 34 | 1 | 3.7 |
| 35 | 486 | .4854 | 1251.4 | 35 | 1 | 3.4 |
| 36 | 500 | .5000 | 1289. | 36 | 1 | 3.6 |

## EXAMPLE IV.

Let ABCD repreſent a Tun, or other Utenſil, ſtanding upon its greater Baſe. The Diameter at Bottom is 108 Inches, the Diameter at Top 93, the Depth 30, and its Content 857 Gallons.



The Diameter of the leſſer Baſe being divided by the Diameter of the greater Baſe gives .86 ; whence the Segments are to be taken out of the 6th Column. And the Content of the Tun being divided by its circumſcribing Cylinder gives .879 nearly ; whence the Segments are to be corrected by the 6th Col. of Differences in the 6th Table. Now to every Depth add (30) the whole Depth of the Tun, and divide the Sums by (60) twice the Depth of the Tun ; then from the correſponding ſpheroid. Segments corrected deduct .5000, and multiply the reſidual Segments into (1714) twice the Content of the Tun.

(6th Var. Diam.
6th Var. of Curv.)

## OPERATIONS.

60)31.00(.517 nearly.

| | |
|---|---|
| Againſt 517 in the 6th Col. of Seg. is | .5186 |
| Againſt 52, in the 6th Col, of Diff. 6th Tab. is | 9 |
| | .5195 |
| | .5000 |
| Seg. at 1 Inch . . . | .0195 |

60)32.00(.533.

| | |
|---|---|
| Segment againſt 533 is . . . | .5361 |
| Difference againſt 53 is . . . | 12 |
| | .5373 |
| | .5000 |
| Seg. at 2 Inches . . . . | .0373 |

In like manner all the other Segments are found, as exhibited in the following Table.

| Wet Inches. | Segments. | Contents in Gallons. | Contents in |  |  | Dry Inches. |
|---|---|---|---|---|---|---|
|  |  |  | B | F | G |  |
| 1 | .0195 | 33.4 |  | 3 | 7.9 | 29 |
| 2 | .0373 | 63.9 | 1 | 3 | 4.4 | 28 |
| 3 | .0563 | 96.5 | 2 | 3 | 3. | 27 |
| 4 | .0753 | 129.1 | 3 | 3 | 1.6 | 26 |
| 5 | .0928 | 159. | 4 | 2 | 6. | 25 |
| 6 | .1114 | 190.9 | 5 | 2 | 3.9 | 24 |
| 7 | .1298 | 222.5 | 6 | 2 | 1.5 | 23 |
| 8 | .147 | 252. | 7 | 1 | 5.5 | 22 |
| 9 | .1652 | 283.1 | 8 | 1 | 2.6 | 21 |
| 10 | .1832 | 314. | 9 |  | 8. | 20 |
| 11 | .2 | 342.8 | 10 |  | 2.8 | 19 |
| 12 | .2175 | 372.8 | 10 | 3 | 7.3 | 18 |
| 13 | .235 | 402.8 | 11 | 3 | 3.3 | 17 |
| 14 | .2514 | 430.9 | 12 | 2 | 5.9 | 16 |
| 15 | .2686 | 460.4 | 13 | 2 | 1.4 | 15 |
| 16 | .2855 | 489.3 | 14 | 1 | 4.8 | 14 |
| 17 | .3014 | 516.6 | 15 |  | 6.6 | 13 |
| 18 | .3181 | 545.2 | 16 |  | 1.2 | 12 |
| 19 | .3344 | 573.2 | 16 | 3 | 3.7 | 11 |
| 20 | .3499 | 599.7 | 17 | 2 | 4.7 | 10 |
| 21 | .366 | 627.3 | 18 | 1 | 6.8 | 9 |
| 22 | .3819 | 654.6 | 19 | 1 | 0.1 | 8 |
| 23 | .3969 | 680.3 | 20 |  | 0.3 | 7 |
| 24 | .4124 | 706.8 | 20 | 3 | 1.3 | 6 |
| 25 | .4278 | 733.2 | 21 | 2 | 2.2 | 5 |
| 26 | .442 | 757.6 | 22 | 1 | 1.1 | 4 |
| 27 | .457 | 783.3 | 23 |  | 1.3 | 3 |
| 28 | .471 | 807.3 | 23 | 2 | 8.3 | 2 |
| 29 | .4855 | 832.1 | 24 | 1 | 7.6 | 1 |
| 30 | .5 | 857. | 25 |  | 7. | 0 |

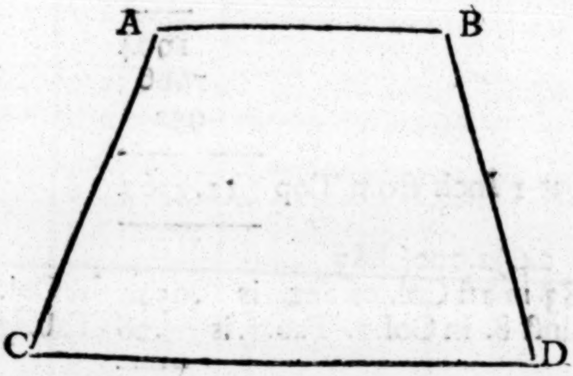
## EXAMPLE V.

Let the Tun ABCD be propoſed, whoſe Sides are ſtreight, and Baſes elliptical.

At the Top the Dimenſions are Tranſverſe Diameter 65, Conjugate 60, Mean 62, 45.

At the Bottom Tranſverſe 110, Conjugate 100, Mean 104, 88.

Depth 12, and the Content 239.



The mean Diameter of the upper Baſe divided by the mean Diameter of the lower Baſe, gives .60 nearly; but this not coming within the Limits of the Tables, and the Index (67) at the Top of the 1ſt Col. of Seg. exceeding 60 as much as 67 is exceeded by the Index (74) at the Top of the 3d Col. the Difference of the Segments in the 1ſt and 3d Columns, corrected by the Differences in the 1ſt Column of the 1ſt and 3d differential Tables (becauſe the Sides are ſtreight) muſt be ſubſtracted from the corrected Segment of the 1ſt Col. This being premiſed, the following Operations will appear plain.

Twice the Depth of the Tun is 24, and 24)1.000(.042 nearly.

| | | | |
|---|---|---|---|
| Seg. againſt 42 in 1ſt Col. is | .0253 | In Col. 3 | .0294 |
| Diff. againſt 4. in Col. 1. Tab. 1. is | 24 | In Tab. 3 | 22 |
| Corrected Seg. of the 1ſt Var. | .0277 | Cor. Seg. 3 Var. | .0316 |
| Diff. of corrected Seg. ſubſt. | .0039 | Cor. Seg. 1 Var. | .0277 |
| True Seg. for 1 Inch from Top | .0238 | Diff. | .0039 |
| Twice the Content – | 478 | | |
| | 1904 | | |
| | 1666 | | |
| | 952 | | |
| Content at 1 Inch from Top | 11.3764 | | |

24.)2.000(.083

| | | | |
|---|---|---|---|
| Againſt 83 in 1ſt Col. of Seg. is | .0544 | In Col. 3 | .0614 |
| Diff. againſt 8. in Col. 1. Tab. 1. is | .28 | Tab. 3 | .23 |
| | .0572 | | .0637 |
| | .0065 | | .0572 |
| Seg. for 2 Inches from the Top | .0507 | | .0065 |
| Multiply by – – | 478 | | |
| Content at 2 Inches — | 24.2346 | | |

24)3.000(.125

| | | | |
|---|---|---|---|
| Seg. againſt 125, in Col. 1. is | .0881 | Col. 3. | .0970 |
| Diff. againſt 13, *per* Col. 1. Tab. 1. | 13 | Tab. 3. | 18 |
| | .0894 | | .0988 |
| | .0094 | | .0894 |
| Seg. for 3 Inches from the Top | .0800 | | .0094 |
| Multiply by – – | 478 | | |
| Content —— | 38.24 | | |

24)4.000(.167 nearly.

| | | |
|---|---|---|
| Seg. againſt 167, *per* 1ſt and 3d Col | .1254 | .1354 |
| Diff. againſt 17, *per* 1ſt Col. of 1ſt and 3d Tables – } | 12 | 3 |
| | .1242 | .1357 |
| | .0115 | .1242 |
| Seg. for 4 Inches from rhe Top | .1127 | .0115 |
| | 478 | |
| Content — | 53.8706 | |

After the ſame Manner all the other Contents are found, as exhibited in the following Table.

| Dry Inches. | Content from the Top. | Content from the Bottom. | Wet Inches. |
|---|---|---|---|
| 0 | 0 | 239. | 12 |
| 1 | 11.4 | 227.6 | 11 |
| 2 | 24.2 | 214.8 | 10 |
| 3 | 38.2 | 200.8 | 9 |
| 4 | 53.9 | 185.1 | 8 |
| 5 | 70.8 | 168.2 | 7 |
| 6 | 89.8 | 149.2 | 6 |
| 7 | 110.3 | 128.7 | 5 |
| 8 | 131.5 | 107.5 | 4 |
| 9 | 156.1 | 82.9 | 3 |
| 10 | 181.9 | 57.1 | 2 |
| 11 | 209.4 | 29.6 | 1 |
| 12 | 239. | 0 | 0 |

The ſame Method will hold good in Inching ſuch Utenſils as have Square or rectangular Baſes, of which the following is an Inſtance.

EX-

## EXAMPLE VI.

There is a Tun whoſe Ends are Rectangles.

The Length of the Top is 68 Inches, Breadth 85, Mean 76,2.

The Length of the Bottom 100, Breadth 80, Mean 89,4.

The Depth 30, and the Content 736, Ale Gallons.

If you divide the mean Side (76.2) of the Top by the mean Side (89,4) of the Bottom, the Quotient will be .85. Wherefore the Segments muſt be taken out of the 6th Col. and muſt be corrected by the Differences in the 1ſt Col. of the 6th diff. Table, becauſe there is no Curvature in the Sides.

This being premiſed, to the wet Inches add (30) the Depth of the Tun, and divide the Sum by (60) twice the Depth of the Tun; from the correſponding Segment corrected deduct .5000, and the Remainder multiplied into (1472) twice the Content of the Tun, will give the Content at the reſpective Depth.

## OPERATIONS.

60)31.000(.5166

| | |
|---|---|
| Seg. againſt 517, in the 6th Col. is —— | .5186 |
| Diff. againſt 52 in Col. 1. of Tab. 6. is —— | 12 |
| | .5198 |
| Ded. —— — — | .5 |
| True Seg. for 1 Inch from the Bottom — | .0198 |
| Multiply by —— — | 1472 |
| Content at 1 Inch from the Bottom | 29.1456 |

60)32.000(.533

Seg. againſt 533 is —— —— ·5361

Difference againſt 53 is —— 16

·5377

·5

True Seg. for 2 Inches —— .0377

1472

Content for 2 Inches —— —— 55·4944

And after the ſame Manner are all the reſt of the Contents found, as in the following Table.

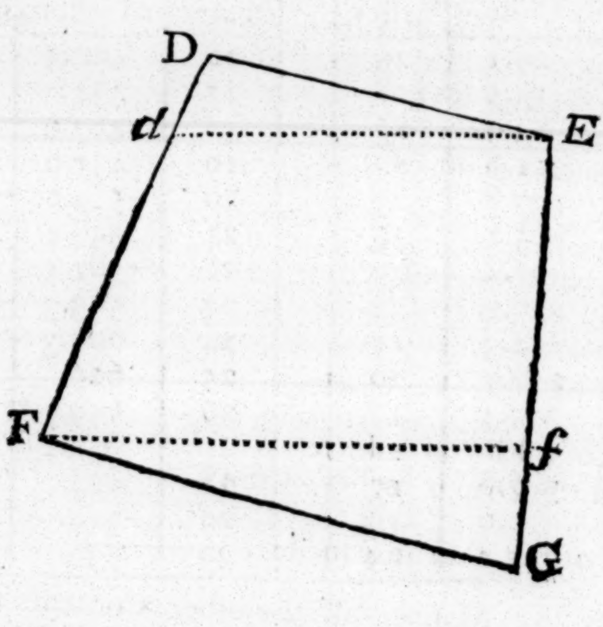
Note, The ſpheroidical Segments muſt always be corrected by the Differences of the 1ſt Var. when there is no Curvature in the Sides.

| Wet Inches. | Contents in Gallons | Dry Inches. |
|---|---|---|
| 1 | 29·1 | 29 |
| 2 | 55·5 | 28 |
| 3 | 83·9 | 27 |
| 4 | 111·8 | 26 |
| 5 | 137·8 | 25 |
| 6 | 165·1 | 24 |
| 7 | 192·4 | 23 |
| 8 | 217·6 | 22 |
| 9 | 244·3 | 21 |
| 10 | 270·7 | 20 |
| 11 | 295·4 | 19 |
| 12 | 321·2 | 18 |
| 13 | 346·6 | 17 |
| 14 | 370·6 | 16 |
| 15 | 395·7 | 15 |
| 16 | 420.5 | 14 |
| 17 | 444· | 13 |
| 18 | 467·9 | 12 |
| 19 | 491·9 | 11 |
| 20 | 514·6 | 10 |
| 21 | 538.2 | 9 |
| 22 | 561·5 | 8 |
| 23 | 583·3 | 7 |
| 24 | 606.3 | 6 |
| 25 | 629. | 5 |
| 26 | 649·7 | 4 |
| 27 | 672.1 | 3 |
| 28 | 694· | 2 |
| 29 | 714· | 1 |
| 30 | 736· | 0 |

If the Tun ſhould lean a little, as is generally the Caſe, that Part of it contained between the two Hoofs may be inched after the ſame Manner as any of the preceding Examples; and if to the ſeveral wet Inches of that Part, taken at the Dipping-place, you add the Depth belonging to the Drip taken at the ſame Place, and to the ſeveral Contents you add the Quantity of the Drip, you will then have a Table for the Tun in ſuch a Poſition.

## EXAMPLE.

Let the Tun DEFG be propoſed. The mean Diameter of the Part *d*EF*f* at Top is 67 Inches, the mean Diameter of the ſame Part at Bottom 100, the Depth of the ſaid Part 12, and the Content 288 Wine Gallons. The whole Depth of the Tun at the Dipping-place 15 Inches, the Depth of the Drip at the ſame Place 2 Inches, and the Quantity of the Drip (or Hoof F*f*G) 15 Gallons.



The

The mean Diameter 67 being divided by the mean Diameter 100, will give .67, which ſhews, that the Segments are to be taken out of the 1ſt Col. and corrected by the 1ſt Table of Differences; and the Sides being ſtreight, the Differences are alſo to be taken out of the 1ſt Col.

## OPERATIONS.

| | |
|---|---|
| 24)13.(.542 nearly. | |
| Seg. againſt 542 in the 1ſt Col. | .5514 |
| Diff. againſt 54, in the 1ſt Col. 1ſt Tab. | 62 |
| Segment corrected | .5576 |
| Deduct | .5 |
| True Seg. for the Part *d* EF *f* at 1 Inch wet | .0576 |
| Multiply by (twice the Cont. of *d* EF *f*) | 576 |
| Content of *d* EF *f* at 1 Inch wet | 33.1776 |
| Depth of the Drip 2 Inches, Content | 15. |
| Content of the Tun at 3 Inches wet | 48.1776 |
| 24)14.(.583. | |
| Segment againſt 583 | .6011 |
| Difference againſt 58 | 96 |
| | .6107 |
| Ded. | .5 |
| | .1107 |
| Multiply by | 576 |
| Content of *d* EF *f* at 2 Inches | 63.7632 |
| Depth of the Drip 2 Inches, Cont. | 15. |
| Content of the Tun at 4 Inches | 78.7632 |

And in like Manner all the other Contents may be found, as in the following Table.

| Wet Inches. | Quantity in the Tun. | Dry Inches. |
|---|---|---|
| 2 | 15. | 13 |
| 3 | 48.2 | 12 |
| 4 | 78.8 | 11 |
| 5 | 108.8 | 10 |
| 6 | 136.7 | 9 |
| 7 | 162.4 | 8 |
| 8 | 187.1 | 7 |
| 9 | 210.3 | 6 |
| 10 | 231.5 | 5 |
| 11 | 251.2 | 4 |
| 12 | 270. | 3 |
| 13 | 287. | 2 |
| 14 | 303. | 1 |

As it may happen ſometimes, that the Index of Diam. Var. cannot be found at the Top of the Tables, that is, when it is leſs than 67, ſome Inſtances whereof you will find in the foregoing Examples, I have thought it not amiſs to add the following Table, by which, in ſuch Caſes, the Variety of the Differences, in the reſpective differential Tables, which will correct the ſpheroidical Segments, will readily be known. For, if the Index of the Var. of Curvat. of any Utenſil be ſought in this Table againſt the Index of Diam. Var. the Place or Column in which the ſaid Index, or the neareſt Number to it, ſtands, will ſhew the Var. of Curvat. of that Utenſil, and this will be the Var. of the Differences in the proper differential Table, which will reduce the ſpheroid. Seg. to the Segments of that Utenſil.

| Indexes of Diam Var. | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 Var Cone | 2 Var Conoid | 3 Var | 4 Var | 5 Var | 6 Var | 7 Var | 8 Var | 9 Var | 10 Var | 11 Var |
| 40 | 520 | 580 | 587 | 594 | 601 | 608 | 615 | 622 | 629 | 636 | 643 |
| 41 | 526 | 584 | 591 | 598 | 605 | 612 | 619 | 626 | 633 | 640 | 647 |
| 42 | 532 | 588 | 595 | 602 | 609 | 615 | 622 | 629 | 636 | 643 | 650 |
| 43 | 538 | 592 | 599 | 606 | 612 | 619 | 626 | 633 | 640 | 646 | 653 |
| 44 | 544 | 597 | 604 | 610 | 617 | 624 | 631 | 637 | 644 | 651 | 657 |
| 45 | 551 | 601 | 608 | 614 | 621 | 628 | 634 | 641 | 648 | 654 | 661 |
| 46 | 557 | 606 | 613 | 619 | 626 | 632 | 639 | 645 | 652 | 658 | 665 |
| 47 | 563 | 610 | 617 | 623 | 630 | 636 | 643 | 649 | 656 | 662 | 669 |
| 48 | 570 | 615 | 621 | 628 | 634 | 641 | 647 | 653 | 660 | 666 | 673 |
| 49 | 577 | 620 | 626 | 633 | 639 | 645 | 652 | 658 | 664 | 671 | 677 |
| 50 | 583 | 625 | 631 | 638 | 644 | 650 | 656 | 663 | 669 | 675 | 681 |
| 51 | 590 | 630 | 636 | 642 | 648 | 655 | 661 | 667 | 673 | 679 | 685 |
| 52 | 597 | 635 | 641 | 647 | 653 | 659 | 666 | 672 | 678 | 684 | 690 |
| 53 | 603 | 640 | 646 | 652 | 658 | 664 | 670 | 676 | 682 | 688 | 694 |
| 54 | 610 | 646 | 652 | 658 | 664 | 670 | 676 | 681 | 687 | 693 | 699 |
| 55 | 617 | 651 | 657 | 663 | 668 | 674 | 680 | 686 | 692 | 697 | 703 |
| 56 | 624 | 657 | 663 | 668 | 674 | 680 | 686 | 691 | 697 | 703 | 708 |
| 57 | 632 | 662 | 668 | 673 | 679 | 685 | 690 | 696 | 702 | 707 | 713 |
| 58 | 639 | 668 | 674 | 679 | 685 | 690 | 696 | 701 | 707 | 712 | 718 |
| 59 | 646 | 674 | 679 | 685 | 690 | 696 | 701 | 707 | 712 | 718 | 723 |
| 60 | 653 | 680 | 685 | 691 | 696 | 701 | 707 | 712 | 717 | 723 | 728 |
| 61 | 661 | 686 | 691 | 697 | 702 | 707 | 712 | 718 | 723 | 728 | 733 |
| 62 | 668 | 692 | 697 | 702 | 707 | 713 | 718 | 723 | 728 | 733 | 738 |
| 63 | 676 | 698 | 703 | 708 | 713 | 718 | 723 | 728 | 733 | 738 | 743 |
| 64 | 683 | 705 | 710 | 715 | 720 | 725 | 730 | 734 | 739 | 744 | 749 |
| 65 | 691 | 711 | 716 | 721 | 725 | 730 | 735 | 740 | 745 | 749 | 754 |
| 66 | 698 | 718 | 723 | 727 | 732 | 737 | 742 | 746 | 751 | 756 | 760 |

| Indexes of Diam Var. | Indexes of the Varieties of Curvature. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 12 Var | 13 Var | 14 Var | 15 Var | 16 Var | 17 Var | 18 Var | 19 Var | 20 Var | 21 Var | 22 Var Spher. |
| 40 | 650 | 657 | 664 | 671 | 678 | 685 | 692 | 699 | 706 | 713 | 720 |
| 41 | 654 | 660 | 667 | 674 | 681 | 688 | 695 | 702 | 709 | 716 | 723 |
| 42 | 657 | 663 | 670 | 677 | 684 | 691 | 698 | 704 | 711 | 718 | 725 |
| 43 | 660 | 667 | 674 | 680 | 687 | 694 | 701 | 708 | 714 | 721 | 728 |
| 44 | 664 | 671 | 677 | 684 | 691 | 698 | 704 | 711 | 718 | 724 | 731 |
| 45 | 668 | 674 | 681 | 687 | 694 | 701 | 707 | 714 | 721 | 727 | 734 |
| 46 | 672 | 678 | 685 | 691 | 698 | 704 | 711 | 717 | 724 | 730 | 737 |
| 47 | 675 | 682 | 688 | 695 | 701 | 708 | 714 | 721 | 727 | 734 | 740 |
| 48 | 679 | 685 | 692 | 698 | 705 | 711 | 717 | 724 | 730 | 737 | 743 |
| 49 | 684 | 690 | 696 | 703 | 709 | 715 | 722 | 728 | 734 | 741 | 747 |
| 50 | 688 | 694 | 700 | 706 | 713 | 719 | 725 | 731 | 738 | 744 | 750 |
| 51 | 692 | 698 | 704 | 710 | 716 | 722 | 728 | 735 | 741 | 747 | 753 |
| 52 | 696 | 702 | 708 | 714 | 720 | 727 | 733 | 739 | 745 | 751 | 757 |
| 53 | 700 | 706 | 712 | 718 | 724 | 730 | 736 | 742 | 748 | 754 | 760 |
| 54 | 705 | 711 | 717 | 723 | 729 | 735 | 740 | 746 | 752 | 758 | 764 |
| 55 | 709 | 715 | 721 | 726 | 732 | 738 | 744 | 750 | 755 | 761 | 767 |
| 56 | 714 | 720 | 725 | 731 | 737 | 743 | 748 | 754 | 760 | 765 | 771 |
| 57 | 719 | 724 | 730 | 735 | 741 | 747 | 752 | 758 | 764 | 769 | 775 |
| 58 | 724 | 729 | 735 | 740 | 746 | 751 | 757 | 762 | 768 | 773 | 779 |
| 59 | 729 | 734 | 739 | 745 | 750 | 756 | 761 | 767 | 772 | 778 | 783 |
| 60 | 734 | 739 | 744 | 750 | 755 | 760 | 766 | 771 | 776 | 782 | 787 |
| 61 | 739 | 744 | 749 | 754 | 760 | 765 | 770 | 775 | 781 | 786 | 791 |
| 62 | 744 | 749 | 754 | 759 | 764 | 769 | 774 | 780 | 785 | 790 | 795 |
| 63 | 749 | 754 | 759 | 764 | 769 | 774 | 779 | 784 | 789 | 794 | 799 |
| 64 | 754 | 759 | 764 | 769 | 774 | 779 | 783 | 788 | 793 | 798 | 803 |
| 65 | 759 | 764 | 769 | 773 | 778 | 783 | 788 | 793 | 797 | 802 | 807 |
| 66 | 765 | 770 | 774 | 779 | 784 | 789 | 793 | 798 | 803 | 807 | 812 |

To illuſtrate the Uſe of the laſt Table, let the Top-Diameter of the Top-Part of a Still be 21 Inches, the Diam. of the Baſe 41, the Height 7, and the Content 26 Wine Gallons. And let it be required to inch the ſame.

The Diam. at Top (21) being divided by the Diam. at Bottom (41) gives .51; but this being leſs than 67, and 83, which exceeds 67 as much as 67 exceeds 51, being an Index of the 5th Diam. Var. to the Segments of the 1ſt Var. corrected by the 1ſt Table of Differences, I add the Differences between them, and the Segments of the 5th Var. corrected by the 5th Table of Differences. And the Quotient of (26) the Content divided by (40) the circumſcribing Cylinder, *viz.* 650, being compared with the Numbers ſtanding againſt 51 in the laſt Table, and the neareſt to it, (*viz.* 648) found to be an Index of the 5th Var. of Curvature, the Differences correcting thoſe Segments will be of the 5th Var. This being premiſed, Suppoſe a Cask, whoſe Head Diameter is 21, Bung Diameter 41. Length 14, and Content 52. Inch this Cask from the Middle upwards, and from each reſulting Segment take .5 for the Half that is wanting.

### OPERATIONS.

Depth — 7
Add — 1

Twice the Depth is 14)8.00(.571
Seg. againſt 571, in the 1ſt Col. .5867 In Col. 5 .5796
Diff. againſt 57, in 5th Col. of Tab. 1 64 Col 5 Tab 5 28

Segment *per* 1ſt Col. corrected .5931 .5824
Seg. *per* 5th Col. corrected ſubſt. .5824

Diff. of the ſpher. Seg. corrected .0107
Seg. *per* 1ſt Col. corrected add .5931

Sum - - .6038
Deduct - - .5
True Seg. for 1 Inch from Bot. .1038
Twice the Content multiply by 52
Content at 1 Inch — 5.3976

Depth 7
Add 2

14)9(.643 nearly

| | | | |
|---|---|---|---|
| Seg. againſt 643, in Col. 1. is | .6725 | In Col. 5 | .6591 |
| Diff. againſt 64 in Col. 5. Tab. 1. is | 82 | Col5Tab5 | 34 |
| Seg. *per* 1ſt Col. corrected | .6807 | | .6625 |
| Seg. *per* 5th Col. cor. ſubſt. | .6625 | | |
| Difference – – | .0182 | | |
| Seg. *per* 1ſtCol.cor. abating .5 add | .1807 | | |
| True Seg. at 2 Inches | .1989 | | |
| Twice the Content, multiply by | 52 | | |
| Content at 2 Inches | 10.3428 | | |

7
3

14)10(.714

| | | | |
|---|---|---|---|
| Seg. againſt 714 in Col. 1. is | .7533 | In Col. 5 | .7354 |
| Diff. againſt 71, *per* Col5. Tab1. | 65 | Col5Tab5 | 23 |
| | .7598 | | .7377 |
| | .7377 | | |
| | .0221 | | |
| Seg. *per* Col. 1. cor. abating .5 | .2598 | | |
| | .2819 | | |
| Multiply by – – | 52 | | |
| Content at 3 Inches — | 14.6588 | | |

| | | | |
|---|---|---|---|
| 7 | | | |
| 4 | | | |
| 14)11(.786 nearly | | | |
| Seg. againſt 786, in Col. 1. is | .8293 | In Col. 5 | .8096 |
| Diff. againſt 79 *per* Col.5 .Tab. 1. | 28 | Col5Tab5 | 2 |
| | .8321 | | .8098 |
| | .8098 | | |
| | .0223 | | |
| Seg. *per* 1ſtCol.cor. abating .5 | .3321 | | |
| | .3544 | | |
| | 52 | | |
| Content at 4 Inches | 18.4288 | | |

| | | | |
|---|---|---|---|
| 7 | | | |
| 5 | | | |
| 14)12(.857 | | | |
| Seg. againſt 857 in Col. 1. is | .8963 | In Col. 5 | .8784 |
| Diff. againſt 86, *per* Col5. Tab1. | 3 | Col5Tab5 | 13 |
| | .8960 | | .8771 |
| | .8771 | | |
| | .0189 | | |
| Seg. *per* Col. 1. cor. abating .5 | .3960 | | |
| | .4149 | | |
| | 52 | | |
| Content at 5 Inches — | 21.5748 | | |

7
6
14)13(·929

| | | | |
|---|---|---|---|
| Seg. againſt 929 in Col. 1. | ·9545 | In Col. 5 | ·9429 |
| Diff. againſt 93 in Col. 5. Tab. 1. | 18 | Col5.Tab5 | 16 |
| | ·9527 | | ·9413 |
| | ·9413 | | |
| | ·0114 | | |
| Seg. *per* Col. 1. cor. abating ·5 | ·4527 | | |
| | ·4641 | | |
| | 52 | | |
| Content at 6 Inches | 24·1332 | | |
| Content at 7 Inches | 26. | | |

Note, That in all Caſes of this Kind, if the tabular Height of the Segment is leſs than 500, the Segment of the 1ſt Var. will always be leſs than the Segment of the other Var. and their Difference, after Correction, muſt be ſubſtracted from the corrected Segment of the 1ſt Var. that it may be proportionably leſſened, or reduced to a Var. proper to the Utenſil; and when the Height is above 500, the Segment of the 1ſt Var. will always be greater than the other, and their Difference, after Correction, muſt be added to the corrected Segment of the 1ſt Var.

I intended here to have added Tables of Differences for equating the Segments of Spheroids lying to the Segments of other Solids of leſs Curvature; but as theſe can be of Service only in ullaging cloſe Casks, and the Contents of ſuch are, in general, computed as if they were Spheroids, I ſhall defer it for the preſent, and only give the following Rule, by which they may be eaſily reduced, *viz.*

From

From ten Times the mean Diam. of the given Caſk, ſubſtract ſeven Times the Bung Diam. and a third Part of the Remainder will be the Head Diam. of a Spheroid, whoſe other Dimenſions and Content are the ſame with thoſe of the propoſed Caſk: The Head Diam. being thus reduced, the Caſk may be ullaged like a Spheroid.

## EXAMPLE I.

There is a lying Caſk, in the Form of the middle Fruſtum of two parabolic Conoids, whoſe Bung Diam. is 38 Inches, Head Diam. 29, wet Inches 8.7, and the Content 272 Wine Gallons. Required the Quantity of Liquor in the Caſk.

Mean Diam. multiplied by 10 is — 338.0
Bung Diam. multiplied by 7 is — 266.0

3)72.0(24

38)24.0(.63
38)8.7(.229 nearly.

Becauſe the 1ſt Quot. 63 is leſs than (67) the leaſt Index of Diam. Var. at the Top of the Table of Segments for Spheroids lying, and 71, which is an Index of the 2d Diam. Var. exceeds 67 as much as 67 exceeds 63, the Difference of the Segments of the 1ſt and 2d Varieties muſt be ſubſtracted from the Segment of the 1ſt Var.

Segment of the 1ſt Var. againſt 229 is .1440
Segment of the 2d Var. againſt 229 is .1473

Difference — — .0033

Segment of the 1ſt Var. leſſened by .0033 is .1407
Content of the Caſk — 272

2814
9849
2814

Quantity of Liquor in the Caſk is — 38.2704

## EXAMPLE II.

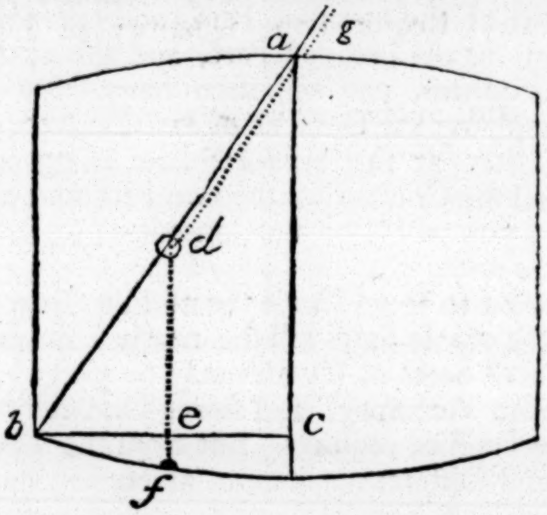
Let there be a Cask in the Form of the middle Fruſtum of two Cones, whoſe Bung Diam. is 32 Inches, Head Diam. 26, Content 114 Gallons, and the wet Inches 10. Required the Quantity of Liquor in the Cask.

```
Mean Diam. multiplied by 10 is    —      290
Bung Diam. multiplied by 7 is     —      224
                                       ______
                                       3) 66(22

            32)22.0(.69 nearly.
                 (1 Var.)
            32)10.0(.312

Segment (1 Var. Spher. ly.) againſt 312 is   .2453
Content          ——          ——                114
                                            ______
                                              9812
                                             2453
                                            2453
                                           _______
Quant. of Liquor in the Cask     ——        27.9642
```

If the Degree of Curvature of any Cask, or other Utenſil, be known, or any Judgment can be formed thereof near the Truth, by viewing it, the Indexes at the Top of the Tables of Differences, and in the Table, page 205, will be found very uſeful in determining their full Contents. For if you take the Number under that Variety, which your Judgment ſhall direct you to, ſtanding againſt the Index of the Diam. Var. of the Cask or Utenſil, and multiply it into the Area of the Bung, or greateſt Circle, the Product will be the Area of a mean Circle, obſerving to prick off three Decimals for the Multiplier. But as the Form of a Utenſil cannot be aſcertained, with any Certainty, this Way, it has been uſual to find the full Contents of open Utenſils, by takeing a ſufficient Number of Diameters within ſide: And I am am of Opinion, the ſame thing may eaſily be accompliſhed in cloſe Casks, by dropping a Plumb-line from any Part or Parts of an Inſtrument put in at the Bung-hole diagonally, which the following Figure may ſerve to explain.



The Line *ab* repreſents that Part of the Inſtrument put into the Cask, which meaſures the Diagonal; *gdf* the Plumb-line ſuſtained at *d* by a Contrivance formed to ſlide up and down the Inſtrument, ſo that the Plummet may be made to drop from any Part of it; ~~and~~ *df* the Diſtance of the Plummet from that Part, when it reſts upon the Side of the Cask.

Now becauſe the Triangles *abc*, *dbe*, are ſimilar, if *db* be the Half of *ab*, *be* will be the Half of *bc*, and *de* the Half of *ac*; and the Value of *de* (which is equal to Half the Bung Diam. made leſs by a fourth Part of the Difference between it and the Head Diam.) being taken from the Meaſure of *df*, leaves (*ef*) Half the Difference of the Diameter in the Middle between the Head and Bung, and the Head Diameter. And whatever Part *db* is of *ab*, *de* will be the like Part of *ac*, and *be* of *bc*. Whence it is very plain, that, by this Artifice, as many Diameters may be found within-ſide of a Cask, as the Gauger ſhall think neceſſary for finding its Content: But three Diameters, *viz.* the Head, Bung, and one in the Middle, between the Head and Bung, will be ſufficient for determining the Content of any cloſe Cask; and three Diameters, *viz.* one at each End, and one in the Middle, will be ſufficient for determining the Content of any open Utenſil broadeſt at one of the Ends. And when any open Utenſil occurs, which is not broadeſt at one of the Ends, if you divide ſuch Utenſil into two Fruſtums, at the broadeſt Part, and take Diameters at each End, at the broadeſt Part, and alſo in the Middle of each Fruſtum, you will then have three Diameters for determining the Content of each Fruſtum ſeparately, the Diameter at the broadeſt Part being common to both; and the Contents of the two Fruſtums being added together, you will have the Content of the whole Utenſil. Here note, that the Sum of the extreme Diameters being added to four Times the middle Diameter, a ſixth Part of the whole Sum will be nearly a mean Diameter. And thus all Sorts of Utenſils may be gauged and inched always with Accuracy, and fewer Dimenſions than the ordinary Practice requires. But from the Tables of Segments and Differences herein given for that Purpoſe, other Tables of Segments might eaſily be derived, which would be better accommodated to the Inching of open Utenſils, what is here done that Way being intended only to ſhew the Exactneſs and Univerſality of the Method.

# APPENDIX.

I HAVE, in the foregoing Work, fully explained the Method of Ullaging and Inching accurately all Sorts of cloſe Casks, and open Utenſils, in all the Varieties that can well happen: But as there may be ſome Perſons who, perhaps, will think the Operations too tedious for common Practice, in this Appendix I ſhall ſhew how it may be done with Accuracy, and the ſame Expedition, as by the Lines of Segments, on the Sliding-Rule.

The two following Tables exhibit the Errors which may ariſe on account of the different Proportions of the Diameters, by uſing thoſe Lines in determining the Ullage of any ſpheroidical Cask, whoſe Content is 215 Gallons.

## SPHEROID ſtanding.

| Var. of the Caſk. | Bung Diam. | Head Diam. | Length | Content in Wine Gallons | Quantity in the Cask at 10 Inch. wet, *per* |  | Errors of the Rule. | Quantity in the Cask at 30 Inch. wet, *per* |  | Errors of the Rule. | Increaſe or Decreaſe, *per* |  | Errors of the Rule. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  |  |  |  |  | Sliding Rule. | Table. |  | Sliding Rule. | Table. |  | Sliding Rule. | Table. |  |
| 1 | 38.0 | 25.5 |  |  |  | 30.8 | 4.7 |  | 141.8 | 4.2 |  | 111.0 | 8.9 |
| 2 | 37.5 | 26.6 |  |  |  | 31.9 | 3.6 |  | 141.1 | 3.5 |  | 109.2 | 7.1 |
| 3 | 37.1 | 27.8 |  |  |  | 33.0 | 2.5 |  | 140.4 | 2.8 |  | 107.4 | 5.3 |
| 4 | 36.7 | 29. |  |  |  | 33.8 | 1.7 |  | 139.8 | 2.2 |  | 106.0 | 3.9 |
|  |  |  | 53.8 | 215 | 35.5 |  |  | 137.6 |  |  | 102.1 |  |  |
| 5 | 36.2 | 30.0 |  |  |  | 35.0 | 0.5 |  | 139.1 | 1.5 |  | 104.1 | 2.0 |
| 6 | 35.8 | 31.1 |  |  |  | 36.1 | 0.6 |  | 138.4 | 0.8 |  | 102.3 | 0.2 |
| 7 | 35.3 | 32.1 |  |  |  | 37.2 | 1.7 |  | 137.7 | 0.1 |  | 100.5 | 1.6 |
| 8 | 34.9 | 33.2 |  |  |  | 38.3 | 2.8 |  | 136.9 | 0.7 |  | 98.6 | 3.5 |

## SPHEROID lying.

| Var. of the Caſk. | Head Diam. | Bung Diam. | Content | Quantity in the Cask at 9.3 Inch. wet, *per* |  | Errors of the Rule. | Quantity in the Cask at 28.7 Inch wet, *per* |  | Errors of the Rule. | Increaſe or Decreaſe, *per* |  | Errors of the Rule. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  |  |  |  | Sliding Rule. | Table. |  | Sliding Rule. | Table. |  | Sliding Rule. | Table. |  |
| 1 | 25.5 |  |  |  | 35.0 | 1.1 |  | 180.0 | 2.6 |  | 145.0 | 3.7 |
| 2 | 27.0 |  |  |  | 35.6 | 0.5 |  | 179.3 | 1.9 |  | 143.7 | 2.4 |
| 3 | 28.5 |  |  |  | 36.3 | 0.2 |  | 178.7 | 1.3 |  | 142.4 | 1.1 |
| 4 | 29.6 |  |  |  | 37.0 | 0.9 |  | 178.0 | 0.6 |  | 141.0 | 0.3 |
|  |  | 38.0 | 215 | 36.1 |  |  | 177.4 |  |  | 141.3 |  |  |
| 5 | 31.5 |  |  |  | 37.7 | 1.6 |  | 177.3 | 0.1 |  | 139.6 | 1.7 |
| 6 | 33.1 |  |  |  | 38.4 | 2.3 |  | 176.6 | 0.8 |  | 138.2 | 3.1 |
| 7 | 34.6 |  |  |  | 39.2 | 3.1 |  | 175.8 | 1.6 |  | 136.6 | 4.7 |
| 8 | 36.1 |  |  |  | 39.9 | 3.8 |  | 175.0 | 2.4 |  | 135.1 | 6.2 |

Now, if the Segments are always taken from the Tables, inſtead of the Sliding-Rule, and the other Operations are performed by the Lines A and B on the Sliding-Rule, the Content of any Ullage may be found very expeditiouſly, and always exact. And if the Officers were to place the Varieties of ſuch Casks as are fixed, or frequently ullaged, over the Contents in their Stock-books, as they eaſily might do, this would, at all Times, direct them to the proper Column of Segments.

The Varieties of Casks, with reſpect to their Diameters, are aſcertained in the following Manner.

---

Divide the Head Diam. by the Bung Diam. and the Quotient being

| | |
|---|---|
| .67<br>.68<br>.69 | The Cask will be of the 1ſt Var. |
| .70<br>.71<br>.72<br>.73 | 2d |
| .74<br>.75<br>.76 | 3d |
| .77<br>.78<br>.79<br>.80 | 4th |
| .81<br>.82<br>.83<br>.84 | 5th |
| .85<br>.86<br>.87<br>.88 | 6th |
| .89<br>.90<br>.91<br>.92 | 7th |
| .93<br>.94<br>.95 | 8th |

And by the following Table, their Varieties, both with reſpect to their Diameters and Curvatures, will be known.

| Diam Var. | Head Diam divid by the Bung Diam. | Contents divided by the circumſ. Cylinders, by which the Var. of Curv. are diſtinguiſhed. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 Var Cone | 2 Var Conoid | 3 Var | 4 Var | 5 Var | 6 Var | 7 Var | 8 Var | 9 Var | 10 Var | 11 Var |
| 1 | 67 | 706 | 724 | 729 | 734 | 738 | 743 | 747 | 752 | 757 | 761 | 766 |
| | 68 | 714 | 731 | 736 | 740 | 745 | 749 | 754 | 758 | 763 | 767 | 771 |
| | 69 | 722 | 738 | 742 | 747 | 751 | 756 | 760 | 764 | 769 | 773 | 777 |
| 2 | 70 | 730 | 745 | 749 | 753 | 758 | 762 | 766 | 770 | 775 | 779 | 783 |
| | 71 | 738 | 752 | 756 | 760 | 764 | 769 | 773 | 777 | 781 | 785 | 790 |
| | 72 | 746 | 759 | 763 | 767 | 771 | 775 | 779 | 783 | 787 | 791 | 795 |
| | 73 | 754 | 766 | 770 | 774 | 778 | 782 | 786 | 789 | 793 | 797 | 801 |
| 3 | 74 | 762 | 774 | 778 | 782 | 785 | 789 | 793 | 797 | 800 | 804 | 808 |
| | 75 | 771 | 781 | 785 | 788 | 792 | 796 | 799 | 803 | 807 | 810 | 814 |
| | 76 | 779 | 789 | 793 | 796 | 800 | 803 | 807 | 810 | 814 | 817 | 821 |
| 4 | 77 | 788 | 796 | 799 | 803 | 806 | 810 | 813 | 816 | 820 | 823 | 827 |
| | 78 | 796 | 804 | 807 | 811 | 814 | 817 | 820 | 824 | 827 | 830 | 833 |
| | 79 | 805 | 812 | 815 | 818 | 821 | 825 | 828 | 831 | 834 | 837 | 840 |
| | 80 | 813 | 820 | 823 | 826 | 829 | 832 | 835 | 838 | 841 | 844 | 847 |
| 5 | 81 | 822 | 828 | 831 | 834 | 837 | 839 | 842 | 845 | 848 | 851 | 854 |
| | 82 | 831 | 836 | 839 | 842 | 844 | 847 | 850 | 853 | 855 | 858 | 861 |
| | 83 | 840 | 844 | 847 | 849 | 852 | 854 | 857 | 860 | 862 | 865 | 867 |
| | 84 | 849 | 853 | 855 | 858 | 860 | 863 | 865 | 868 | 870 | 873 | 875 |
| 6 | 85 | 857 | 861 | 863 | 866 | 868 | 870 | 872 | 875 | 877 | 879 | 882 |
| | 86 | 866 | 870 | 872 | 874 | 876 | 879 | 881 | 883 | 885 | 887 | 889 |
| | 87 | 876 | 878 | 880 | 882 | 884 | 886 | 888 | 890 | 892 | 894 | 896 |
| | 88 | 885 | 887 | 889 | 891 | 893 | 895 | 897 | 898 | 900 | 902 | 904 |
| 7 | 89 | 894 | 896 | 898 | 900 | 901 | 903 | 905 | 907 | 908 | 910 | 912 |
| | 90 | 903 | 905 | 907 | 908 | 910 | 911 | 913 | 915 | 916 | 918 | 919 |
| | 91 | 913 | 914 | 915 | 917 | 918 | 920 | 921 | 923 | 924 | 926 | 927 |
| | 92 | 922 | 923 | 924 | 926 | 927 | 928 | 930 | 931 | 932 | 933 | 935 |
| 8 | 93 | 932 | 932 | 933 | 934 | 935 | 937 | 938 | 939 | 940 | 941 | 942 |
| | 94 | 941 | 942 | 943 | 944 | 945 | 946 | 947 | 948 | 949 | 950 | 951 |
| | 95 | 951 | 951 | 952 | 953 | 953 | 954 | 955 | 956 | 957 | 957 | 958 |

The Numbers in this Table are the Indices put at the Top of the Tables of Differences.

| Diam Var. | Head Diam divid. by the Bung Diam | Contents divided by the circumf. Cylinders, by which the Var. of Curv. are diſtinguiſhed. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 12 Var | 13 Var | 14 Var | 15 Var | 16 Var | 17 Var | 18 Var | 19 Var | 20 Var | 21 Var | 22 Var Spher. |
| 1 | 67 | 770 | 775 | 780 | 784 | 789 | 793 | 798 | 803 | 807 | 812 | 816 |
| | 68 | 776 | 780 | 785 | 789 | 794 | 798 | 803 | 807 | 812 | 816 | 821 |
| | 69 | 782 | 786 | 790 | 795 | 799 | 803 | 808 | 812 | 817 | 821 | 825 |
| 2 | 70 | 787 | 792 | 796 | 800 | 804 | 809 | 813 | 817 | 821 | 826 | 830 |
| | 71 | 794 | 798 | 802 | 806 | 810 | 815 | 819 | 822 | 827 | 831 | 835 |
| | 72 | 799 | 803 | 807 | 811 | 815 | 819 | 823 | 827 | 831 | 835 | 839 |
| | 73 | 805 | 809 | 813 | 817 | 821 | 825 | 828 | 832 | 836 | 840 | 844 |
| 3 | 74 | 812 | 815 | 819 | 823 | 827 | 830 | 834 | 838 | 842 | 845 | 849 |
| | 75 | 818 | 821 | 825 | 828 | 832 | 836 | 839 | 843 | 847 | 850 | 854 |
| | 76 | 824 | 828 | 831 | 835 | 838 | 842 | 845 | 849 | 852 | 856 | 859 |
| 4 | 77 | 830 | 833 | 837 | 840 | 844 | 847 | 850 | 854 | 857 | 861 | 864 |
| | 78 | 837 | 840 | 843 | 846 | 850 | 853 | 856 | 859 | 863 | 866 | 869 |
| | 79 | 844 | 847 | 850 | 853 | 856 | 859 | 862 | 866 | 869 | 872 | 875 |
| | 80 | 850 | 853 | 856 | 859 | 862 | 865 | 868 | 871 | 874 | 877 | 880 |
| 5 | 81 | 857 | 859 | 862 | 865 | 868 | 871 | 874 | 876 | 879 | 882 | 885 |
| | 82 | 864 | 866 | 869 | 872 | 875 | 877 | 880 | 883 | 886 | 888 | 891 |
| | 83 | 870 | 873 | 875 | 878 | 880 | 883 | 886 | 888 | 891 | 893 | 896 |
| | 84 | 878 | 880 | 882 | 885 | 887 | 890 | 892 | 895 | 897 | 900 | 902 |
| 6 | 85 | 884 | 886 | 889 | 891 | 893 | 896 | 898 | 900 | 902 | 905 | 907 |
| | 86 | 892 | 894 | 896 | 898 | 900 | 902 | 904 | 907 | 909 | 911 | 913 |
| | 87 | 899 | 901 | 903 | 905 | 907 | 909 | 911 | 913 | 915 | 917 | 919 |
| | 88 | 906 | 908 | 910 | 912 | 914 | 916 | 917 | 919 | 921 | 923 | 925 |
| 7 | 89 | 914 | 915 | 917 | 919 | 921 | 922 | 924 | 926 | 928 | 929 | 931 |
| | 90 | 921 | 923 | 924 | 926 | 927 | 929 | 931 | 932 | 934 | 935 | 937 |
| | 91 | 929 | 930 | 931 | 933 | 934 | 936 | 937 | 939 | 940 | 942 | 943 |
| | 92 | 936 | 937 | 939 | 940 | 941 | 943 | 944 | 945 | 946 | 948 | 949 |
| 8 | 93 | 944 | 945 | 946 | 947 | 948 | 949 | 950 | 952 | 953 | 954 | 955 |
| | 94 | 952 | 952 | 953 | 954 | 955 | 956 | 957 | 958 | 959 | 960 | 961 |
| | 95 | 959 | 960 | 961 | 961 | 962 | 963 | 964 | 965 | 965 | 966 | 967 |

Admit there is a Caſk ſuch, that the Head Diameter being divided by the Bung Diameter, the Quotient will be 77; and the Content of the ſame Caſk being divided by its circumſcribing Cylinder, the Quotient will be 833.

77 being found in the 2d Col. of the laſt Table; againſt it, in that Col. which is numbered 13, is 833. And theſe being found in a Line that belongs to the 4th diametrical Variety, as appears by the 1ſt Column, the Table ſhews, that the Caſk is of the 4th Variety, with reſpect to its Diameters, and of the 13th Variety with reſpect to its Curvature. And any Ullage taken in this Caſk muſt be computed by the 4th Col. of Segments; and (if you would have it accurately) thoſe Segments muſt be corrected by the Differences in the 13th Col. of Differences, of the 4th differential Table.

There is a Tun, or other Utenſil, ſuch, that the Diam. of the leſſer Baſe being divided by the Diam. of the greater Baſe, the Quotient will be 72, and the Content of the ſame being divided by its circumſcribing Cylinder, the Quotient will be 819.

72 being found in the 2d Col. the 1ſt Col. ſhews, that this Tun is of the 2d diametrical Variety; and 819 (being compared with the Numbers ſtanding againſt 72) is found in the Col. numbered 17; which ſhews, that this Tun is of the 17th Variety of Curvature. Therefore it may be inched by the Segments of the 2d Var. corrected by the Differences of the 17th Var. in the 2d differential Table.

There is a Tun, or other Utenſil, ſuch, that the Diam. of the leſſer Baſe being divided by the Diam. of the greater Baſe, the Quotient will be 69, and the Content of the ſame being divided by its circumſcribing Cylinder, the Quotient will be 767.

69 being found in the 2d Column, the 1ſt Column ſhews, that this Utenſil belongs to the 1ſt Diam. Var. and 767 being compared with the Numbers ſtanding againſt 69, the neareſt to it (*viz.* 769) is found under the 9th Var. which ſhews, that it alſo belongs to the 9th Var. of Curvature. Therefore this Utenſil may be inched

inched by the Segments of the 1ſt Var. corrected by the Differences of the 9th Var. in the 1ſt different. Table.

The ſame Method is to be obſerved in determining the Varieties of any other Cask, or Utenſil, that may be propoſed; and here note, that when the Quotient of the Content divided by the circumſ. Cylinder, happens to fall in the Col. for the 1ſt Var. the Utenſil will be conical, or ſtreight-ſided; when it falls in the Col. for the 2d Var. it will be conoidical; and when it falls in the Col. for the 22d Var. it will be ſpheroidical.

The Variety of any ſpheroidical Cask, with reſpect to its Diameters, being known, or thus determined, the Method of computing the Content of the Ullage by the Tables, and the Lines A and B, on the Sliding-Rule, will be as follows:

1ſt. Set the Length, or Bung Diameter on A (according as it is a ſtanding or lying Cask) to Unity on B, and againſt the wet Inches on A is the tabular Height of the Segment on B, which look for in the 1ſt Column of the Table of Segments, and againſt it (in the Column proper to the Variety) you'll find the true Segment.

2dly. Set Unity on A to the Content on B, then againſt the Segment (found as above) on A, is the Content of the Ullage on B.

## EXAMPLE I.

There is a ſpheroidical Cask, whoſe Length is 54 Inches, the Content 215 Gallons Wine Meaſure, and the wet Inches, or Depth of Liquor in the Cask 12.3. [the Bung Diam. is 37.1, Head Diam. 27.8] It is required to find how much Liquor is in the Cask.

3d Variety Diamet.

1ſt. 54 on A being ſet to Unity on B, againſt 12.3 on A is 228 on B, and againſt 228 (in the 3d Col. of Segments ſtanding Table) is .1953.

2dly. Setting Unity on A to 215 on B, againſt .1953 (or 195) on A is 42 on B, which is the Quantity of Liquor in the Cask.

## EXAMPLE II.

There is a ſpheroidical Cask, whoſe Bung Diameter is 35.3, [Head Diameter 32.1] wet Inches 8.5, and the Content 215 Gallons. Required the Quantity of Liquor in the Cask.

7th Variety Diamet.

35.3 on A being ſet to Unity on B, againſt 8.5 on A is 241 on B. And againſt 241 (in the 7th Col. of Segments in Table for lying Casks) is .1778.

Wherefore, ſetting Unity on A to 215 on B, againſt 1778 (or 178) on A is 38.2 on B, which is the Quant. of Liquor in the Cask.

## To inch any Spheroidical CASK.

Set the Length or Bung Diam. (according as it is a ſtanding or a lying Cask) on A to Unity on B, and againſt the ſeveral wet Inches on A, you will have the tabular Heights of the Segments on B, which ſet down on a Piece of Paper againſt 1, 2, 3, *&c.* reſpectively, till you have gone through half the Cask. This being done, take (from the Table) the Segments ſtanding againſt thoſe ſeveral Heights; and, having ſet Unity on A to the Content of the Cask on B, againſt the ſeveral Segments on A, you will have the reſpective Contents on B, for 1 Inch, 2 Inches, 3 Inches, *&c.*

## EXAMPLE.

There is a ſpheroidical Cask, whoſe Length is 40 Inches, and the Content 97 Gallons, the Bung Diam. being 32, and Head Diam 24. It is required to inch the ſame in an upright Poſition.

3d Diamet. Variety.

| | | | | | |
|---|---|---|---|---|---|
| Set 40 on A to Unity on B; and againſt | 1 | on A, is | 25 | on B. And the Seg. are | .0171 |
| | 2 | | 50 | | .0354 |
| | 3 | | 75 | | .0549 |
| | 4 | | 100 | | .0754 |
| | 5 | | 125 | | .0970 |
| | &c. | | &c. | | &c. |

| | | | | |
|---|---|---|---|---|
| Setting Unity on A to 97 on B, againſt | .0171 | on A, is | 1,6 Cont. at 1 Inch | on B. |
| | .0354 | | 3,4 Cont. at 2 Inch. | |
| | .0549 | | 5,3 Cont. at 3 Inch. | |
| | .0754 | | 7,3 Cont. at 4 Inch. | |
| | .0970 | | 9,4 Cont. at 5 Inch. | |
| | &c. | | &c. | |

The Content at 19 Inches, ſubſtracted from the whole Content, leaves the Content at 21 Inches, the Content at 18 Inches, ſubſtracted from the whole Content, leaves the Content at 22 Inches, and the Content at 17 Inches, ſubſtracted from the whole Content, leaves the Content at 23 Inches, and ſo on, till you have gone through the remaining Half.

There is a Cask, [which is the middle Fruſtum of two parab. Conoids,] whoſe Length is 70.2, Content 225.2, and the wet Inches 26. [Bung Diam. 38.4, Head Diam. 28.8] Required the Quantity of Liquor in the Cask.

This Cask, by the preceding Methods, will be found to be of the 3d Variety Diamet. and of the 2d Variety of Curvature.

Therefore, firſt ſetting 70.2 on A to Unity on B, againſt 26 on A is 370 on B.

| | |
|---|---|
| Againſt 370 (in Col. 3. of Seg. for ſtand. Casks) is | .3493 |
| Againſt 37 (in Col. 2. of Diff. 3d different. Table) is | 64 |
| True Segment —— —— | .3429 |

Laſtly, Setting Unity on A to 225,2 on B, againſt .3429 (or 343) on A, is 77.2 on B, which is the true Quant. of Liquor in the Cask.

The following Table, which is deduced from the Tables of Differences, ſhews the greateſt Variations of the ſpheroidical Segments from the true Segments, that can happen, in the ſeveral diamet. Varieties, on account of the Difference of Curvature, in Gallons and tenth Parts of a Gallon. And the Height of the Segment, to produce ſuch Errors, muſt be nearly One-third, or Two-thirds of the Length.

| Content of the Cask or Utenſil in Gallons. | 1 Var. Diam | 2 Var. Diam | 3 Var. Diam | 4 Var. Diam | 5 Var. Diam | 6 Var. Diam | 7 Var. Diam | 8 Var. Diam |
|---|---|---|---|---|---|---|---|---|
| | Gal. | Gal. | Gal. | Gal. | Gal. | Gal. | Gal. | Gal. |
| 1000 | 9.6 | 7.8 | 6.4 | 5.6 | 4.0 | 3.0 | 2.0 | 1.1 |
| 950 | 9.1 | 7.4 | 6.1 | 5.3 | 3.8 | 2.9 | 1.9 | 1.0 |
| 900 | 8.6 | 7.0 | 5.8 | 5.0 | 3.6 | 2.7 | 1.8 | 1.0 |
| 850 | 8.2 | 6.6 | 5.4 | 4.8 | 3.4 | 2.6 | 1.7 | 0.9 |
| 800 | 7.7 | 6.2 | 5.1 | 4.5 | 3.2 | 2.4 | 1.6 | 0.9 |
| 750 | 7.2 | 5.9 | 4.8 | 4.2 | 3.0 | 2.3 | 1.5 | 0.8 |
| 700 | 6.7 | 5.5 | 4.5 | 3.9 | 2.8 | 2.1 | 1.4 | 0.8 |
| 650 | 6.2 | 5.1 | 4.2 | 3.6 | 2.6 | 2.0 | 1.3 | 0.7 |
| 600 | 5.8 | 4.7 | 3.8 | 3.4 | 2.4 | 1.8 | 1.2 | 0.7 |
| 550 | 5.3 | 4.3 | 3.5 | 3.1 | 2.2 | 1.7 | 1.1 | 0.6 |
| 500 | 4.8 | 3.9 | 3.2 | 2.8 | 2.0 | 1.5 | 1.0 | 0.6 |
| 450 | 4.3 | 3.5 | 2.9 | 2.5 | 1.8 | 1.4 | 0.9 | 0.5 |
| 400 | 3.8 | 3.1 | 2.6 | 2.2 | 1.6 | 1.2 | 0.8 | 0.4 |
| 350 | 3.4 | 2.7 | 2.2 | 2.0 | 1.4 | 1.1 | 0.7 | 0.4 |
| 300 | 2.9 | 2.3 | 1.9 | 1.7 | 1.2 | 0.9 | 0.6 | 0.3 |
| 250 | 2.4 | 2.0 | 1.6 | 1.4 | 1.0 | 0.8 | 0.5 | 0.3 |
| 200 | 1.9 | 1.6 | 1.3 | 1.1 | 0.8 | 0.6 | 0.4 | 0.2 |
| 150 | 1.4 | 1.2 | 1.0 | 0.8 | 0.6 | 0.5 | 0.3 | 0.2 |
| 100 | 1.0 | 0.8 | 0.6 | 0.6 | 0.4 | 0.3 | 0.2 | 0.1 |
| 50 | 0.5 | .04 | 0.3 | 0.3 | 0.2 | 0.2 | 0.1 | 0.1 |

By the above Table it appears, that if the Content of an upright Cask, or other Utenſil, which is of the 8th diamet. Variety, does not exceed 300 Gallons, the ſpheroidical Segments will always give the Content of the Ullage true within .3 of a Gallon, be the Curvature what it will. And if the Content of an upright Cask, which is of the 6th diamet. Variety, does not exceed 150 Gallons, it appears by the ſame Table, that the Content of the Ullage may always be computed by the ſpheroidical Segments within Half a Gallon of the Truth, let the Curvature be what it will.

The Buſineſs of inching all open Utenſils, by this Method, will come under, or may be reduced to, one of the four following Caſes.

Caſe 1. When the Utenſil ſtands upon its leſſer Baſe, and the Diameters increaſe continually from the Bottom upwards, obſerve this Rule:

Set twice the Depth of the Utenſil on A to Unity on B, and againſt the ſeveral wet Inches on A, you will have the reſpective tabular Heights of the Segments on B, which ſet down on a Piece of Paper againſt 1, 2, 3, *&c.* reſpectively, till you have gone through the whole; which being done, take (from the Table) the Segments ſtanding againſt thoſe ſeveral Heights, and correct them by the proper different. Table. Then, ſetting Unity on A to twice the Content of the Utenſil on B, againſt the ſeveral Segments ſo corrected on A, you will have the reſpective Contents on B for 1 Inch, 2 Inches, 3 Inches, *&c.*

*N. B.* It may happen, in very large Utenſils, that the Contents thus found, will differ a ſmall Matter from the Truth, by reaſon the Tables are not ſufficiently extended; but, by dividing them into two or more Parts, and inching thoſe Parts, as if they were ſeparate Utenſils, you may approach to any Degree of Accuracy that you pleaſe.

Caſe 2. When the Utenſil ſtands upon its greater Baſe, and the Diameters decreaſe continually from the Bottom upwards, obſerve this Rule:

Inch it down by the laſt Rule, and then ſubſtract the Contents ſeverally from the whole Content, the Remainders will be the Contents for the ſeveral wet Inches. Or, ſet twice the Depth of the Utenſil on A to Unity on B, and againſt the ſeveral wet Inches increaſed by the Depth of the Utenſil on A, you will have the tabular Heights of the Segments on B, which ſet down againſt 1, 2, 3, &c. reſpectively, till you have gone through the whole. Then take (from the Table) the Segments ſtanding againſt thoſe ſeveral Heights, which correct (if neceſſary) by the proper different. Table; and, having ſet Unity on A to twice the Content of the Utenſil on B againſt the ſeveral Segments ſo corrected and leſſened by .5000 on A, you will have the reſpective Contents on B for 1 Inch, 2 Inches, 3 Inches, &c.

Caſe 3. When the Utenſil ſtands upon its leſſer Baſe, and the Diameters firſt increaſe, and afterwards decreaſe, from the Bottom upwards, obſerve this Rule:

Set twice the Diſtance of the Diameter, taken where it bulges moſt from the Bottom on A to Unity on B, and againſt the ſeveral wet Inches on A, are the tabular Heights of the Segments on B, which ſet down againſt 1, 2, 3, &c. reſpectively, till you have gone through with the whole. This being done, take (from the Table) the Segments ſtanding againſt the ſeveral Heights, which correct (if the Utenſil is not ſpheroidical) by the proper Tables of Differences; and then, if you ſet Unity on A to twice the Content of the Part contained between the Bottom and Place where it bulges moſt on B, againſt the ſeveral Segments corrected on A, you'll have the reſpective Contents on B for 1 Inch, 2 Inches, 3 Inches, &c.

Caſe 4. When the Utenſil ſtands upon its greater Baſe, and the Diameters firſt increaſe, and afterwards decreaſe from the Bottom upwards, obſerve this Rule.

Inch it downwards by the laſt Rule, and the Contents, ſo found, being ſeverally ſubſtracted from the whole Content

Content of the Utenſil, will leave the Contents anſwering to the ſeveral and reſpective wet Inches. Or, you may divide it into two Parts, where it bulges moſt, and inch each Part ſeparately by the 1ſt and 2d Rules.

### EXAMPLE to Caſe 2.

There is a Tun whoſe Diam. at Bottom is 108 Inches, the Diam. at Top 93, the Depth 30, and its Content 857 Gallons.

(6th Variety Diametrical, 6th Variety of Curvature.)

| | | | | | | |
|---|---|---|---|---|---|---|
| 60 on A being ſet Unity on B, againſt | 31 | on A, is | .517 | on B. | And the true Seg. leſſen'd by .5000 will be | .0195 |
| | 32 | | .533 | | | .0373 |
| | 33 | | .550 | | | .0563 |
| | 34 | | .567 | | | .0753 |
| | &c. | | &c. | | | &c. |

*Per* Col. 6. of Segments corrected by Col. 6. of Differences in the 6th differ. Table.

| | | | | | |
|---|---|---|---|---|---|
| Unity being ſet on A to 1714 on B, againſt | .0195 | on A, is | 33,4 | Cont. at 1 Inch | on B. |
| | .0373 | | 63,9 | Cont. at 2 Inch. | |
| | .0563 | | 96,5 | Cont. at 3 Inch. | |
| | .0753 | | 129,1 | Cont. at 4 Inch. | |
| | &c. | | &c. | | |

### EXAMPLE to Caſe 3.

There is a Tun, whoſe Diameter at Top is 83, at the greateſt Bulge 89, and at the Bottom 80. The Diſtance of the greateſt Bulge from the Bottom 21, and whole Depth 36. The Content from the Bottom to the greateſt Bulge 421,6, and the Content from the greateſt Bulge to the Top 301.1. Content of the whole Tun 722.7.

The Diam. at the Bottom (80) being divided by the Diam. at the greateſt Bulge (89), and the Content of the lower Part (421.6) by its circumſcribing Cylinder (463,28) will ſhew, that the Tun is of the 7th Diamet. Var. and of the 5th Var. of Curvature.

Therefore take the Segments from the 7th Col. and the Differences from the 5th Col. of the 7th Table.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 42 on A being ſet to Unity on B, againſt | 1 | on A, is | 23.8 | on B. | Seg. agſt. | 24 | is | .0210 |
| | 2 | | 47.6 | | | 48 | | .0424 |
| | 3 | | 71.4 | | | 71 | | .0633 |
| | 4 | | 95.2 | | | 95 | | .0856 |
| | *&c.* | | *&c.* | | | *&c.* | | *&c.* |

| | | | |
|---|---|---|---|
| Difference againſt | 2 | is | .0002 |
| | 5 | | .0009 |
| | 7 | | .0011 |
| | 9 | | .0012 |
| | *&c.* | | *&c.* |

And the Differences being added to the ſpheroidical Segments, as the Table directs, the true Segments will be .0212, .0433, .0644, .0868, *&c.*

| | | | | | |
|---|---|---|---|---|---|
| Now, Unity being ſet on A to 843,2 on B, againſt | .0212 | on A, is | 17.9 | Cont. at 1 Inch | on B. |
| | .0433 | | 36.5 | Cont. at 2 Inch. | |
| | .0644 | | 54.3 | Cont. at 3 Inch. | |
| | .0868 | | 73.2 | Cont. at 4 Inch. | |
| | *&c.* | | *&c.* | | |

All the Contents to 21 Inches being found, the reſt may be obtained in the following Manner. From 843.2 take the Content at 20 Inches, and the Remainder will be the Content at 22 Inches. From 843.2 take the Content at 19 Inches, and the Remainder will be the Content at 23 Inches, and ſo on to the End.

## To find the full Content of any Cask, or other Utenſil, by the Table, page 220, 221.

Rule. Divide the Diameter of the Head, or leſſer Baſe, by the Diameter of the Bung, or greater Baſe, and look for the Quotient in the 2d Column of the Table; then, if the Utenſil be conical, take the Number ſtanding againſt the ſaid Quotient in the Col. for the 1ſt Var. which multiply into the Area of the Bung, or greateſt Circle, and this Product, by the Length or Depth; and the laſt

laſt Product will be the Content of the Utenſil, obſerving to point off three Decimals for the Number taken out of the Table. If the Utenſil ſhould be conoidical, take the Number ſtanding againſt the ſaid Quot. in the Col. for the 2d Var. and if ſpheroidical, take the Number ſtanding againſt the ſaid Quot. in the Col. for the 22d Var. but if it does not happen to belong to either of theſe Forms, take the Number ſtanding againſt the ſaid Quot. under that Var. which you imagine comes neareſt to the Var. of the Utenſil, and with theſe proceed, as with the firſt-mentioned Number, and you'll obtain the Content very nearly.

If the above-mentioned Quotient ſhould be leſs than 67, look for it in the 1ſt Column of the Table of Indexes, page 205, 206, and take the Number ſtanding againſt it under that Var. in this Table, which you think comes neareſt to the Variety of the Utenſil. Multiply this Number into the Area of the Bung, or greateſt Circle, and the Product by the Length; ſo ſhall the laſt Product be the Content, obſerving (as before) to point off three Decimals for the Multiplier taken out of this Table.

Such open Utenſils as are not broadeſt at one of the Ends, muſt be divided, at the broadeſt Part, into two Fruſtums, and the Content of each Fruſtum found ſeparately.

*F I N I S.*

# ERRATA.

Page 6. l. 9. for Quotient of the Cube read Cube of the Quotient. P. 8. l. 20. for $\frac{3}{1}$ r. $\frac{1}{3}$. P. 59. l. 12. in the Denom. of the Fraction read $2 + rr$.

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